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Agricultural Policy, Economics, and Diverse Farms and Farmers

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JEL Classifications:
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The design, implementation, and evaluation of agricultural policy serves a landscape of diverse farms and farmers who each face different opportunities and challenges. Farm operations vary across key characteristics including farm size, commodities produced, geography, and soil characteristics, among many others. In 2022, just over 1.9 million farms in the United States operated over 880.1 million acres (U.S. Department of Agriculture, 2024). Around 88% of farms were classified as small family farms, those with a gross cash farm income (GCFI) of less than $350,000. These farms operate 46% of U.S. agricultural land, accounting for nearly one-fifth of the total value of agricultural production (Whitt et al., 2023). Large-scale family farms—those with a GCFI greater than $1 million—accounted for 52% of the value of production in 2022. Farm diversity is also linked to the types of commodities produced. For example, small farms account for the largest share of production value for poultry, eggs, and hay, while large-scale family farms lead in beef, hogs, cash grains/soybeans, cotton, dairy, and specialty crops (Whitt et al., 2023).

At the same time, farmers themselves are as diverse as the farms they operate. Farmers vary across multiple dimensions including (but not limited to) educational background, race, ethnicity, sex, farming experience, and income level. Several USDA programs target producers to meet the specific needs of limited resource (LR) producers, beginning farmers/ranchers, and women farmers. LR producers are those with gross farm sales under $180,300 (2020 dollars) and subject to other household income requirements (Todd et al., 2024). Previous research has identified specific challenges for some of these groups of producers including access to credit, financial risk, participating in direct payment programs, and entry into production of specific commodities (Todd et al., 2024).

Articles in this thematic issue of Choices Magazine address topics at the intersection of diversity in U.S. agriculture and different programs or policies related to credit, government payments, and consumer/producer behavior.

The first study is centered around the issue of farmers and farm loans. Escalante et al. analyze USDA Farm Service Agency (FSA) direct lending data to investigate

Articles in this Theme:

how FSA credit scoring affects the distribution of loans and credit access across diverse farms and farmers compared with commercial bank lending practices. The authors find that FSA borrowers are usually “marginal” borrowers under commercial lending standards and discuss how financial measure selection may improve the ability of socially disadvantaged groups to obtain credit.

The next two articles analyze the distribution of government payments across different farm types. Key et al. use 2017 Census of Agriculture data to compare participation in and use of agricultural programs and credit markets across farms classified by principal operator race and ethnicity. The authors find that program participation rates are important for understanding average differences in program use across demographic groups. Operator participation in programs can be related to many factors, including farm size, commodity mix, land ownership, and access to program offices. Padilla et al. use ARMS data to analyze the distribution of self-reported, ad hoc Market Facilitation Program (MFP) payments across farms based on demographic characteristics including race, sex, beginning farmer, and limited resource status. The authors find that average MFP payments to farms with only White operators are approximately 4.6–6.7 times higher than those to farms with only Black operators. Similarly, women-only farms, LR operators, and beginning operators all reported receiving lower levels of average MFP payments compared with their counterparts. The authors find a positive association between acreage and MFP payments, with farm size explaining some of the difference between these groups.

The final two studies focus on different facets of consumer and producer behavior and their intersection with diverse producers. Moss et al. analyze consumer willingness-to-pay (WTP) for food produced by Black entrepreneurs. Estimates find a positive WTP for Black-owned products; however, this effect was smaller in magnitude than a local production label. The authors also find that demographics play an important role in consumer choice of foods produced by Black entrepreneurs, with urban, high-income communities with higher Black representation providing more market opportunities. Focusing on producers, Leiva et al. study market participation and sales among Latino/a immigrant farmers in the Midwest, focusing on the effects of training programs and cultural barriers. The authors find increased investment levels as well as training in farming practices and financial planning are associated with increased market participation, while two different measures of acculturation are associated with reduced participation likelihood.

For More Information

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Are More Socially Disadvantaged Farm Borrowers "Creditworthy" under Farm Service Agency's Unconventional Credit Risk Assessment Model?

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JEL Classifications: J15, J16, Q14, G23, G21
Keywords: Socially disadvantaged farmers, Farm Service Agency, Credit risk scoring, Farm borrower classification, Commercial banks

Lending to Socially Disadvantaged Farmers

The Farm Service Agency (FSA) serves a pivotal role in agricultural finance as the "lender of last resort," relieving farmers from the strain of often unsuccessful loan application stints in the highly competitive mainstream credit market. Regular lenders' assessments of agricultural loan applications usually amplify the sector's more significant, vulnerable exposure to business risks—especially sudden weather disturbances and market volatilities—relative to other industries. Thus, regular lenders are more cautious and highly selective in their credit decisions, leading to farmers' frustrations in loan transactions and, at times, breeding loan aversion attitudes among conservative farmers (Jones, Escalante, and Rusiana, 2015). Given these considerations, the FSA intervenes and offers to provide farm borrowers with "interim" financial resources to help them to develop greater financial strength and business confidence until they can eventually gain regular lenders' favor.

FSA's loan programs are regulated by government mandates for regular allocation of FSA loanable funds for farmers collectively labeled as socially disadvantaged in terms of racial, ethnic, or gender minority status. This directive ensures more equitable credit access for socially disadvantaged farmers in case their status becomes a hurdle in their borrowing experiences. The Agricultural Credit Act of 1987 and subsequent laws (such as the Food, Agriculture, Conservation, and Trade Act of 1990 and a series of farm bills) ensure that federal funds are set aside to accommodate beginning and socially disadvantaged farmers under the FSA's direct and guaranteed loan programs (Koenig and Dodson, 1999; The White House, 2000).

FSA lending policies have been designed to carefully consider the business realities surrounding the operations of socially disadvantaged farmers. Previous studies clarify that these farmers typically run smaller (in terms of both revenues and assets) and less profitable operations (Escalante et al., 2006; Escalante et al., 2018; Ghimire et al., 2020). Hence, FSA has modified its lending guidelines to become more "inclusive" and "accommodating" of its socially disadvantaged borrowers. Specifically, FSA has redefined its "creditworthiness" standard and recalibrated its borrower classification model in ways that deviate from regular commercial lending norms so that more, if not all, socially disadvantaged borrowers can successfully obtain FSA credit. The latter mechanism, which allows for greater objectivity in loan approval decisions, also seeks to quell and resolve past and impending allegations of discriminatory, subjective lending decisions.

As a background, the FSA uses a farm borrower classification system where borrowers are categorized into several classes by scoring specific individual financial performance indicators and calculating an overall weighted score. This classification scheme is used, among other considerations, by loan officers when they make loan approval and packaging decisions. This model's counterpart used by commercial banks is the credit risk (scoring) classification model. This article will later explain how the FSA model is a downgraded (less stringent) version of the commercial bank model in its choice of financial measures, delineation of ratio intervals, and weighing of selected financial measures.

This article utilizes a national dataset of FSA borrowers with approved direct loans from 2004 to 2014 to demonstrate how socially disadvantaged borrowers fare under FSA's less stringent borrower classification model relative to other borrowers. The model's counterpart in the commercial lending sector is also applied to understand the regular lenders' assessment of these

borrowers and uncover variations in borrowers' credit ratings arising from the choice of financial measures and the model's weighing scheme.

The subsequent sections present a progression of FSA's lending predicament that starts with its seminal unconventional definition of "creditworthiness." Such leniency was challenged by a surge of lending discrimination allegations that, in turn, emphasized the need for greater objectivity in its loan approval decision mechanism. The resulting, more objective FSA borrower classification model—a less stringent version of the commercial banking model—is then used to analyze the socially disadvantaged borrowers' credit classifications relative to other borrowers.

Unconventional "Creditworthiness" Standard

Beyond targeted funding allocations, the FSA's mission to serve "socially disadvantaged farmers" is reflected in some special consideration clauses in its credit risk appraisal policies. According to their lending guidelines, a borrower's "credit history" should be assessed with the following exceptions that do not constitute "delinquency" or "unacceptable credit history:" (i) any foreclosure, judgment, bankruptcy, or delinquent payment caused temporary circumstances and were beyond the borrower's control; (ii) isolated instances of late payments that do not indicate an overall delinquency pattern; and (iii) lack or absence of history of credit transactions (USDA-FSA, 2001).

These concessions reflect an unusual leniency that regular, commercial lenders would typically not grant to their loan clients. These commercial lenders impose straightforward, strict definitions of delinquency, which would not make any distinction between factors within or beyond the borrower's control. Compared to their regular lending peers, the FSA more aptly leans toward accommodating farm borrowers based on their business potential (even when current indicators may fall short of regular credit standards), with the underlying motive to assist these borrowers in their efforts and aspirations to operate more viable, competitive businesses.

Lending Discrimination Allegations

Such social equalizing principle of the FSA loan programs, however, had been challenged by multiple individual and class action lawsuits filed by farmers who claim to be victims of FSA's discriminatory lending practices (Escalante et al. 2006; Escalante, Epperson, and Raghunathan, 2009; Escalante et al., 2018; Ghimire et al., 2020). The landmark case, Pigford v. Glickmann, originally started as individual lawsuits and eventually succeeded in elevating their cases to class action lawsuit status that covered other, eligible African American farmer complainants. Subsequently, more lawsuits were filed by other minority farmer groups, including American Indian (Keepseagle v. Vilsack), Hispanic American (Garcia v. Vilsack), and women (Love v. Vilsack) farmers, among many others (Feder and Cowan, 2013).

The USDA settled these cases by providing cash remunerations, in addition to tax and debt relief provisions, to farmers who complied with documentary evidence requirements (May, 2012). During the Obama administration, settlements with African American, American Indian, Hispanic American, and women farmers had already exceeded $4 billion in federal funds (Feder and Cowan, 2013).

Objectifying FSA's Loan Decision-Making

Unfair lending decisions that fuel allegations of bias and discrimination emanate from lending officers' tendency to favor certain types of borrowers and exclude others. In the minority farmers' lawsuits against the USDA, race and/or gender were the alleged underlying bases of selective credit decisions. Logically, the apparent remedy to minimize and possibly eradicate lending officers' discrimination tendencies would be the objectification of the credit risk assessment model.

Lenders' loanable fund supplies are usually limited and could only satisfy a portion of all clients' loan requests; hence, lenders usually resort to credit rationing, which requires the careful identification of a select group of borrowers they can accommodate (Turvey and Weersink, 1997). The selection procedure varies across lenders and may be influenced by their level of tolerance of borrowers' risk profiles and levels, market competition, and institutional policies. These then form the benchmarks of lenders' credit risk assessment and credit scoring models (Miller and LaDue, 1989; Turvey, 1991; Splett et al., 1994).

Credit risk assessment models could eliminate the need for subjective input from lending officers. It is important to clarify, however, that subjectivity does not always translate to bias or unfairness in lending decisions. Lending officers, for instance, may rely on qualitative assessments of business metrics using their knowledge of prevailing industry issues or any rumors affecting certain firms' business reputation. Subjective decisions become dubious and concerning when credit decisions are influenced by lending officers' aversion to certain types of borrowers, with the bias linked to the borrowers' innate attributes (such as race/ethnicity and gender) that are not predictors of business potential, survival, and success.

FSA Farm Borrower Classification (FBC) Model

The FSA subscribes to the objectification principle through its FBC model, which structurally resembles a typical regular lender's credit (risk assessment) scoring model (Splett, et al., 1994). An overall "credit classification" score is calculated for each borrower based on separate weighted scores assessed for

Table 1. Farm Service Agency's Borrower Account Classification Model

Variables (Measures/Classes	Interval Ranges	Weights
LIQUIDITY (current ratio)[a]		
Class 1	≥1.25	
Class 2	1.16–1.24	
Class 3	1.00–1.15	
Class 4	≤0.99	___* 0.25=___
SOLVENCY (debt-asset ratio)		
Class 1	≤0.4000	
Class 2	0.4001–0.6900	
Class 3	0.6901–0.9900	
Class 4	≥0.9901	___* 0.25=___
PROFITABILITY (return on assets)[b]		
Class 1	≥0.0700	
Class 2	0.0360–0.0699	
Class 3	0.0100–0.0359	
Class 4	≤0.000	___* 0.25=___
REPAYMENT CAPACITY (term debt and capital lease coverage - TDCLC)[c]		
Class 1	≥1.15	
Class 2	1.08–1.14	
Class 3	1.00–1.07	
Class 4	≤0.99	___* 0.25=___
	Total Score (Numeric)	

Overall FSA Borrower Account Classification

Total Overall Score	Classification	Classification Category
1.00 to 1.59	1	Commercial
1.60 to 2.19	2	Standard
2.20 to 2.79	3	Acceptable
2.80 to 4.00	4	Marginal

Notes: [a] Current Ratio is a measure of liquidity and is calculated as $\frac{Current\ Assets}{Current\ Liabilities}$.

[b] Return on Assets is calculated as $\frac{Net\ Income}{Total\ Assets}$.

[c] TDCLC measures the firm's ability to meet its loan and lease obligations before making other asset purchase decisions. This is calculated as $\frac{Net\ Income+Depreciation+Interest-Income\ Tax-Family\ Living\ Expenses}{Principal\ and\ Interest\ on\ Term\ Debt\ and\ Capital\ Leasess}$

Source: USDA-FSA, FSA Handbook (2022).

selected financial indicators capturing a firm's liquidity, solvency, profitability, and repayment capacity conditions. The overall score is used to categorize borrowers under four categories that serve as guide to FSA's loan decisions. FSA's actual classification scheme has five classes, with the fifth category for unclassified borrowers. In this analysis, we focus on the first four categories, which provide a more relatively meaningful assessment of borrowers' creditworthiness.

As laid out in Table 1, the most favorable borrower classification is Category 1 ("Commercial"), as these are borrowers with the "best potential to obtain commercial credit." In contrast, borrowers classified as Category 4 are considered Marginal. These are borrowers with loan applications that could possibly be denied or, if granted some credit accommodation, might require more vigilant loan monitoring schemes, in addition to careful packaging of loan terms commensurate to perceived borrowers' risk profiles.

Deviations to the Regular Lending Norm

There are striking deviations notable in the FSA FBC model when compared with a regular commercial lender's prototype credit scoring model for term loan accounts (Splett et al., 1994). This commercial banking model is a combination of experiential and statistical inputs compiled from agricultural lenders in a workshop held in 1993 (Splett et al, 1994). Although individual commercial banks develop their own systems to

Table 2. Commercial Bank's Credit Scoring Classification Model

Variables (Measures/Classes	Interval Ranges	Weights	Equivalent FSA Borrower Rating
LIQUIDITY (current ratio)			
Class 1	> 2.00		
Class 2	1.60–2.00		
Class 3	1.25–1.60		Class 1
Class 4	1.00–1.25		Classes 2 and 3
Class 5	< 1.00	___x 0.10 =____	Class 4
SOLVENCY (equity-asset ratio)[a]			
Class 1	> 0.80		
Class 2	0.70–0.80		
Class 3	0.60–0.70		Class 1
Class 4	0.50–0.60		Class 2
Class 5	< 0.50	___x 0.35 =____	Classes 2–4
PROFITABILITY (farm return on equity)[b]			
Class 1	> 0.10		
Class 2	0.06–0.10		
Class 3	0.04–0.06		
Class 4	0.01–0.04		
Class 5	< 0.01	___x 0.10 =____	
REPAYMENT CAPACITY (capital debt-repayment margin (CDRM) ratio)[c]			
Class 1	> 0.75		
Class 2	0.50–0.75		
Class 3	0.25–0.50		
Class 4	0.05–0.25		Classes 1–3
Class 5	< 0.05	___x 0.35 =____	Classes 3 and 4
FINANCIAL EFFICIENCY (Net Farm Income from Operations Ratio) [d]			
Class 1	> 0.40		
Class 2	0.30–0.40		
Class 3	0.20–0.30		
Class 4	0.10–0.20		
Class 5	< 0.10	___x 0.10 =____	
	Total Score (Numeric)		

Credit Score Classes Total Overall Score	Classification
1.00 to 1.80	1
1.81 to 2.70	2
2.71 to 3.60	3
3.61 to 4.50	4
4.51 to 5.00	5

Notes: [a] Equity-Asset Ratio equivalents are calculated as $\frac{Equity}{Asset} = 1 - \frac{Debt}{Asset}$.
[b] Return on Equity cannot be expressed in terms of Return on Assets without information on the firm's equity and debt holdings.
[c] FSA's model uses the Term Debt and Capital Lease Coverage (TDCLC) Ratio. This model's CDRM Ratio is expressed in TDCLC terms under the assumption that replacement allowance and unfunded capital expenditures is zero. The conversion formula is defined as CDRM = TDCLC – 1.
[d] The FSA model does not include a financial efficiency element.

Source: Splett et al. (1994).

Table 3. FSA Borrower Classification Scores by Race/Ethnicity and Gender, 2004–2014

Racial/Ethnic and Gender Group	No. of Borrowers	Current Ratio Score Mean	Debt-Asset Ratio Score Mean	Return on Assets Score Mean	Term Debt Coverage Ratio Score Mean	Borrower Classification Score Mean
White (reference category)	67,863	2.569	2.114	2.717	1.924	2.331
Black	1,916	3.169**	2.267**	3.179**	2.029**	2.661**
Asian	686	2.449**	2.184	3.038**	2.050**	2.430**
American Indian	3,046	2.733**	2.167**	3.081**	1.801**	2.446**
Hispanic	828	2.674**	1.981**	3.004**	2.193**	2.463**
Male	64,684	2.582	2.127	2.745	1.920	2.343
Female	9,655	2.657**	2.068**	2.785**	1.962**	2.368**

Notes: Double asterisks (**) denote the statistical significance at the 5% confidence level of that the difference in FSA borrower classification scores (current ratio score, debt-asset ratio score, return on assets score, term debt coverage ratio score and overall score) between whites (the reference category) and each of the other ethnic groups or between male and female borrowers (where male is reference group). Colored cells indicate direction of the relationship: Red cells indicate that the reference group's score is statistically significantly more favorable than the paired category's score; blue cells indicate that the reference group's score is statistically significantly less favorable than the paired category's score; uncolored cells indicate that the reference group's score is *not* statistically significantly difference from the paired group's score.

calculate credit risk assessment scores, this model is considered representative of commercial banking scoring schemes and has been used in numerous empirical studies in agricultural finance.

The commercial banking model is a five-credit class model (while FSA only has four), considers a different financial measure for three of the four performance areas, and includes a financial efficiency measure as a fifth element. The rating classes within each financial performance category conform to universally accepted credit risk assessment standards, which are regarded as the norms in financial performance analyses.

Table 2 presents the financial performance elements, their respective credit class intervals, and equivalent FSA borrower classifications for identical and equivalent financial ratios in both models. This latter comparison reveals a relatively marked leniency in FSA's credit standards as its borrower classes are defined using lower cut-offs that more favorably rate certain borrowers who, when evaluated under the commercial banking model, would fall under lower credit classes. Specifically, the cut-offs for the liquidity measure (Current Ratio) are lower in the FSA model, where a ratio of 1.25 earns a Class 1 rating in the FSA model but would be assessed as Class 3 in the commercial banking model (since its Class 1 borrowers must have at least a 2.0 result).

In terms of solvency, the FSA model's 0.40 debt-asset ratio threshold for Class 1 borrowers is equivalent to an equity-asset ratio of 0.60 in the commercial banking model. The equivalent of FSA's debt-asset ratio in terms of the commercial bank's equity-asset ratio is calculated as $\frac{Equity}{Asset} = 1 - \frac{Debt}{Asset}$. The latter model has a more stringent cut-off for Class 1 borrowers at 0.80 equity-asset ratio. The least favorable borrower classes require equity-asset ratios of at most 0.50 and 0.01 in the commercial bank and FSA models, respectively.

Scoring Socially Disadvantaged Borrowers' Creditworthiness

Important contrasts between the FSA borrower classification model and a typical commercial bank's credit scoring classification model will be clarified using FSA national data of approved direct loans for 74,339 borrowers for the years 2004–2014. A second layer of our analyses features comparisons of relative financial strengths and weaknesses of borrower groups (using stand-alone race/ethnic and gender categories; and then combined racial/ethnic and gender labels) using borrowers' overall and disaggregated (financial measure component-specific) FSA scores.

Table 3 presents the mean overall and disaggregated (into component financial measures) FSA borrower classification scores for the race/ethnicity and gender classes of borrowers. The statistical significance of differences between pairs of calculated scores for the reference borrower group (White borrowers) and each borrower category are highlighted in colored fonts in the table.

Trends in scoring results provide compelling evidence on White borrowers' consistently dominant overall scores compared to all non-White borrowers' scores. When the overall score is disaggregated into its component financial measures, White borrowers' separate scores are consistently better than Black borrowers' scores for all four financial measure components. Other racial/ethnic groups produce at least better scores than White borrowers in different financial measures: current ratio (Asian Americans), debt-asset ratio (Hispanic Americans), and term debt coverage ratio (American Indians).

Moreover, male borrowers on average receive significantly better overall scores than their female

Table 4. FSA Borrower Classification Scores by Combined Race/Ethnicity and Gender Attributes, 2004–2014

Racial/Ethnic and Gender Group	No. of Borrowers	Current Ratio Score Mean	Debt-Asset Ratio Score Mean	Return on Assets Score Mean	Term Debt Coverage Ratio Score Mean	Borrower Classification Score Mean
White male (reference category)	59,343	2.559	2.124	2.711	1.919	2.328
White female	8,520	2.640**	2.045**	2.762**	1.958**	2.351**
Black male	1,668	3.145**	2.241**	3.239**	2.024**	2.662**
Black female	248	3.331**	2.444**	2.774	2.060	2.652**
Asian male	487	2.460	2.150	2.982**	1.998	2.397**
Asian female	199	2.422	2.266	3.176**	2.176**	2.510**
Amer Indian male	2,482	2.745**	2.165**	3.104**	1.803**	2.454**
Amer Indian female	564	2.683**	2.176	2.980**	1.791**	2.407**
Hispanic male	704	2.658	1.962**	3.024**	2.148**	2.448**
Hispanic female	124	2.766	2.089	2.887	2.452**	2.548**

Notes: Double asterisks (**) denote the statistical significance at the 5% confidence level of that the difference in FSA borrower classification scores (current ratio score, debt-asset ratio score, return on assets score, term debt coverage ratio score and overall score) between whites (the reference category) and each of the other ethnic groups. Colored cells indicate direction of the relationship: Red cells indicate that the reference group's score is statistically significantly more favorable than the paired category's score; blue cells indicate that the reference group's score is statistically significantly less favorable than the paired category's score; uncolored cells indicate that the reference group's score is *not* statistically significantly difference from the paired group's score.

counterparts. Female borrowers outperform their male peers only in one financial measure (leverage).

Under categories that combine racial/ethnic and gender labels (Table 4), the results mirror the earlier trends. White males receive on average significantly more favorable overall scores than all the other borrower categories. Black males consistently produce significantly less favorable scores than the reference group in all four financial measure indicators. On a few occasions, certain combined categories significantly outperform the reference group's results: debt-asset ratio (White females and Hispanic males) and term debt coverage ratio (White females and both gender groups of American Indians).

Table 5 presents the simulated FSA borrowers' scores when the commercial banks' credit scoring standards are applied. In general, the results validate that FSA borrowers in general indeed are "marginally average" under commercial banking credit standards as resulting mean scores for all borrower categories classify them as Class 3 borrowers. Commercial banks typically prioritize Classes 1 and 2 borrowers in their credit accommodation decisions, while Class 3 borrowers' chances of obtaining credit are usually assessed with greater caution and under more protective credit risk management considerations.

Certain results in Table 5 provide some interesting departures from the trends noted in the FSA borrower classification application. White borrowers' overall score is no longer consistently dominant across all racial/ethnic categories. They are now significantly higher (less favorable) than the Hispanic American borrowers' mean overall score. The gender comparison reflects a reverse trend as female borrowers now fare better in the commercial banking model than their male peers. When racial/ethnic and gender labels are combined, White female and Hispanic male borrowers receive significantly better mean scores than White male borrowers. The only consistent result from both the FSA and commercial bank scoring models is the White male borrowers' score dominance over Black female borrowers.

Such disparities in the results from the two credit scoring models can be attributed to two factors: namely, the selection of the model's financial variable components and the variables' weighing schemes. Among other differences, financial efficiency is considered only in the commercial banks' model while profitability measures emphasize different baselines. FSA employs an asset-based profitability measure while the commercial banks' model uses an equity-based variable. These differing emphases could lead to contrasting effects on overall creditworthiness due to inherent disparities in structural business conditions and leveraging alternatives available to farmers of different racial/ethnic and gender attributes.

Implications

This article validates several crucial realities in the FSA's direct lending programs. Indeed, FSA borrowers are usually assessed as "marginal borrowers" under regular lenders' standards. These borrowers' overall mean credit scores calculated under a typical commercial banking credit scoring model are consistently above 3.0, which is considered as the borderline separating preferred and marginal clients. The FSA aptly adjusts to the extent of leniency and adapts its credit scoring standards to the actual credit quality of its borrowers. Even under its more lenient credit scoring approach, FSA's socially disadvantaged borrowers are usually less creditworthy than their White borrower peers. Under the commercial banks' model, however, certain borrower groups tend to fare better (slightly higher "marginal" mean scores) than

Table 5. Borrower Scores under Commercial Banks' Credit Scoring Model, By Race/Ethnicity and Gender, 2004–2014

Racial/Ethnic and Gender Group	No. of Borrowers	Mean Credit Score
Racial/ethnic categories		
White (reference category)	67,863	3.305
Black	1,916	3.338
Asian	686	3.252
American Indian	3,046	3.327
Hispanic	828	3.144**
Gender categories		
Male (reference category)	64,684	3.310
Female	9,655	3.267**
Combined racial/ethnic and gender categories		
White male (reference category)	59,343	3.311
White female	8,520	3.259**
Black male	1,668	3.318
Black female	248	3.470**
Asian male	487	3.236
Asian female	199	3.292
Amer Indian male	2,482	3.336
Amer Indian female	564	3.285
Hispanic male	704	3.115**
Hispanic female	124	3.312

Notes: Double asterisks (**) denote the statistical significance at the 5% confidence level of that the difference in FSA borrower classification scores (current ratio score, debt-asset ratio score, return on assets score, term debt coverage ratio score and overall score) between the applicable reference category and each of the other ethnic groups. Colored cells indicate direction of the relationship: Red cells indicate that the reference group's score is statistically significantly more favorable than the paired category's score; blue cells indicate that the reference group's score is statistically significantly less favorable than the paired category's score; uncolored cells indicate that the reference group's score is *not* statistically significantly difference from the paired group's score.

White borrowers owing to their model's different choice of financial measures and variable weighting scheme.

These validations could help FSA consider modifications in its current borrower classification model. The regular banking model uncovers the relative strengths of some socially disadvantaged borrower groups under certain financial performance categories. Previous studies that compile comparative financial profiles of different FSA borrower categories identify the minority farms' business strengths and vulnerabilities in several areas (Escalante et al., 2006; Escalante et al., 2018; Ghimire et al., 2020). For instance, minority-operated farms usually have better liquidity and solvency ratios than farms operated by their White peers (Escalante et al., 2006; Escalante et al., 2018; Ghimire et al., 2020). While these are positive business attributes, they possibly emanate from the minority farmers' exposure to certain anomalies in the credit and input markets. When socially disadvantaged farmers have limited access to suppliers' credit and regular loans, then they are compelled to make constrained purchase decisions within their realistic means. Some farmers even develop loan aversion after several frustrating attempts to obtain credit (Jones, Escalante, and Rusiana, 2015).

Lower levels of short-term trade and non-current liabilities may produce more favorable liquidity and solvency ratios, but these positive indicators are realized at the expense of diminished business growth potentials. Empirical evidence confirms that minority farmers' businesses are usually significantly smaller in size in terms of both acreage and asset endowment. These conditions are even more aggravated by the inferior quality of their farm business assets. Less productive assets result in lower asset turnover ratios. Hence, these farms' business expansion potentials and access to more productive assets could be constrained by inequities in the credit and asset markets.

Moreover, minority farm operations are usually significantly less profitable than those operated by White farmers. Among other factors, the profit-generating capacity of minority farmers' businesses can be attributed to their inability to command better prices for their outputs. These farmers' experiences of price discrimination in commodity markets can either be provoked by either product quality considerations or plain consumer stereotyping and prejudicial purchasing behavior.

Given these considerations, the FSA must consider a reevaluation of its model through a more deliberate, considerate selection of representative financial measures that emphasize borrowers' relative financial strengths. Moreover, as Splett et al. (1994) demonstrated, a more reliable weighting scheme for the model's financial performance categories may be determined from experiential and statistical techniques. A modified weighting scheme should assign more weight to minority farmers' areas of financial strength (such as liquidity and solvency). These modeling modifications should be aimed at harnessing its borrowers' true creditworthiness potential, especially the socially disadvantaged. The overriding goal of this suggested amendment is to increase the chances of minority farmers' success in obtaining credit, which certainly could have a "trickle down" effect on the farms' business survival and viability efforts. Specifically, the availability of external funds could create several business possibilities for these farms: propel their farms to further growth, afford more productive assets, and improve production and delivery mechanisms that create profit generation opportunities.

Policy efforts aimed at assisting more vulnerable socially disadvantaged farmers must realize that even unbiased, objectified lending decisions could not resolve these farmers' credit access and business viability concerns. After all, as earlier argued, credit inequities are not the only deterrent factor to minority farmers' business survival and success. The eradication of credit access constraints must be accompanied by a more integrated, comprehensive drive to address inequities in other fronts (among others, input, asset and product markets, government subsidy distribution, and access to technical support). Only then will these farmers be able to operate businesses that can compete well with their peers on all fronts, including their claims to an FSA credit accommodation.

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Underserved or Not Served? Participation Rates Explain Much of the Difference in Agricultural Program and Credit Use across Farm Demographic Groups

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The USDA Equity Action Plan outlines several initiatives "to advance programmatic equity and improve access to programs and services for underserved stakeholders" (USDA, 2022). Unfortunately, only limited data are available about USDA program access to help guide these efforts. Analyses of differences in program use across demographic groups often rely on USDA administrative data that only include information on program participants rather than the full farm population (e.g., Giri, Subedi, and Kassel, 2022; Yu and Lim, 2024). As we describe below, data that only include program participants can mask important discrepancies across groups in access to agricultural programs and services.

To help provide context for discussions about program equity and access, we use U.S. Census of Agriculture data to compare participation in and use of agricultural programs and credit markets by farms with Black, American Indian, Asian, and Hispanic principal operators to farms with only non-Hispanic white principal operators. The data show that among program participants, farms with American Indian, Asian, Hispanic and non-Hispanic white principal operators receive, on average, similar levels of program payments and have similar amount of crop insurance coverage. In contrast, among the entire farm population, program receipts and insurance coverage for these groups are generally well below the levels for non-Hispanic white farms. These population-level discrepancies can be largely explained by the fact that Black, American Indian, Asian, and Hispanic farms all have lower participation rates than non-Hispanic white farms for all the programs for which data are available.

The important role of participation rates in explaining variation in average program use across demographic groups suggests that equity in program outcomes could be improved by reducing barriers to participation.

Census of Agriculture Data

The Census of Agriculture, which is administered by the USDA National Agricultural Statistics Service (NASS), aims to collect information from all farms—that is, all agricultural operations that produce, or would normally produce and sell, at least $1,000 of agricultural products per year. NASS allows eligible researchers to access the microdata files used in this study for select statistical research projects (USDA-NASS, 2024). The census collects information about the operation and up to four operators. In 2017, respondents were asked to indicate whether each operator is a "principal operator or senior partner." The NASS Report Form Guide defines the principal operator as "either the person regarded by the other operators as the one making the majority of the decisions or the oldest operator."

We use data from the 2017 Census to compare program use and borrowing across groups of farms classified according to the demographic characteristics of the principal operators (Table 1). For brevity, we refer to a farm as: (i) "Black" if any principal producer reports being Black or African American; (ii) "American Indian" if any principal producer reports being American Indian or Alaskan Native; (iii) "Asian" if any principal producer reports being Asian; (iv) "Hispanic" if any principal producer reports being Hispanic. We also create a "Non-Hispanic white (NHW)" group, defined as farms on which all principal producers report being only non-Hispanic and white.

Payments received from federal and state agricultural programs provide a measure of program use. In 2017, conservations programs, which help farmers adopt practices that protect natural resources, included payments from the Conservation Reserve, Wetlands Reserve, Farmable Wetlands, and Conservation Reserve Enhancement programs. Other USDA programs help mitigate the risks of farming or help

Table 1. Number of Farms by Race and Ethnicity of Principal Operators, 2017

	Number of Farms	Percentage of All Farms
Any principal producer reporting race/ethnicity as		
American Indian, Alaskan Native	55,245	2.7
Asian	16,020	0.8
Black, African American	34,343	1.7
Hispanic (any race)	77,416	3.8
All principal producers reporting race/ethnicity as		
Non-Hispanic white	1,864,356	91.0

Note: For all categories except non-Hispanic white, producers may report the listed race in combination with other races. There were 2,042,220 farms in the United States in 2017.
Source: 2017 Census of Agriculture.

farmers recover from losses due to natural disasters. In 2017, "other federal" payments came almost entirely from the Agriculture Risk Coverage and Price Loss Coverage (ARC/PLC) programs and from supplemental and ad hoc disaster assistance programs (USDA-ERS, 2023).

The Census of Agriculture does not collect data on crop insurance premiums, but insurance coverage can be measured using (i) acres in the operation covered under a crop insurance policy, and (ii) total crop and livestock insurance payments (indemnities) received. Acres insured is an imperfect measure of the level of coverage since the value of production insured per acre can differ significantly depending on the type of commodities produced and on yields. Hence, indemnity payments may provide a better measure of coverage with which to compare groups, although only a fraction of farms with insurance receive these payments in any year.

Credit use is measured by the amount of interest paid on farm-related debt. The census distinguishes between debt secured by real estate (typically long-term loans to purchase farmland) and debt not secured by real estate (usually short- or medium-term loans for seed, fertilizer, breeding stock, machinery, or other inputs or investments). Interest expenses reflect loans from both government and private lenders. In 2017, about half of real estate secured loans and about a third of non-real estate secured loans were obtained from the Farm Credit System, Farm Service Agency, or indirectly through Farmer Mac (USDA-ERS, 2023). The remainder

Table 2. Use of Agricultural Programs and Credit, Participants

	Non-Hispanic White	Black, African American	American Indian, Alaskan Native	Asian	Hispanic (any race)
Agricultural programs					
Total agricultural payments ($)	14,026	6,725	12,421	14,305	14,396
Total federal payments ($)	14,014	6,788	12,502	14,627	14,678
Conservation payments ($)	6,996	3,455	8,687	7,366	6,631
Conservation acres enrolled	95.8	57.1	188.5	128.9	121.5
Other federal payments ($)	13,238	6,690	11,663	14,563	14,486
State and local payments ($)	5,496	2,701	5,066	6,834	3,844
Crop insurance acres enrolled	757	282	849	257	607
Crop insurance payments ($)	26,519	12,643	21,571	27,542	28,498
Credit (interest expenses)					
Total ($)	18,697	7,157	11,123	36,768	18,614
Real estate secured ($)	17,211	7,219	11,555	37,898	17,862
Not real estate secured ($)	9,297	3,376	4,505	13,587	8,743

Note: Mean values calculated conditional on participating in the program or having credit (i.e., reporting positive payments, acres or interest expenses).
Source: USDA NASS 2017 Census of Agriculture.

of the farm debt was obtained from commercial banks, life insurance companies, storage facility loans, individuals, or other sources. In 2017, loans from the USDA Farm Service Agency, which operates loan programs that target historically underserved farmers, represented less than 3% of both real estate and non-real estate secured debt (USDA-ERS, 2023).

Differences in Program Use and Borrowing

Among program participants, differences between NHW and American Indian, Asian, and Hispanic farms are relatively small for most measures of program use (Table 2). For example, American Indian, Asian, and Hispanic farms received 89%, 102%, and 103% the level of total agricultural program payments, and 81%, 104%, and 107% of the level of crop insurance indemnities received by NHW farms, respectively. The discrepancies in acres insured were larger, but this might be caused by differences in commodity mix rather than differences in value of the commodities insured.

In contrast to the other groups, Black farms that participated in programs had substantially lower average levels of program use than NHW farms. Among program participants, Black farms received only about half of the total program payments received by NHW farms and about half the level of insurance indemnities.

There was substantial variation across the groups in terms of interest expenses, suggesting different levels of debt. Among farms with debt, American Indian and Black farms had interest expenses that were 59% and 38% as high as NHW farms, respectively. Hispanic farms had interest expenses that were very similar to NHW farms. Asian operations had almost twice the level of interest expenses as NHW farms.

Table 3 shows the average levels of program use and interest expenses for the full population (participants and nonparticipants) where nonparticipants are assigned a zero level of payments, acres, insured, indemnity payments, or interest expenses. The average differences between NHW farms and the other groups are generally much larger than they were among participants only. For example, farms with an American Indian, Asian, or Hispanic principal operator received, on average, only about a third of the amount of agricultural program payments as NHW farms. American Indian, Asian, and Hispanic farms received between 30% and 56% as many crop insurance indemnity payments as NHW farms.

The substantial gap in program use and interest expenses between NHW farms and Black farms that was observed among participants was even larger for the full farm population. On average, Black farms received only a third of the level of program payments as NHW farms and only a quarter of the indemnity payments.

For the full population, all the demographic groups except Asian farms had lower average interest expense levels than NHW farms. Total interest expenses for Black farms were about a quarter the level of NHW farms. American Indian and Hispanic farms had total interest expenses: 43% and 74% the level of NHW farms, respectively.

Table 3. Use of Agricultural Programs and Credit, All Farms

	Non-Hispanic White	Black, African American	American Indian, Alaskan Native	Asian	Hispanic (any race)
Agricultural programs					
Total agricultural payments ($)	4,715	1,624	1,675	1,465	1,693
Total federal payments ($)	4,645	1,596	1,641	1,400	1,667
Conservation payments ($)	872	157	235	174	201
Conservation acres enrolled	11.9	2.6	5.1	3.0	3.7
Other federal payments ($)	3,773	1,439	1,406	1,225	1,466
State and local payments ($)	70	28	34	66	26
Crop insurance acres enrolled	148	25	48	43	60
Crop insurance payments ($)	1,401	361	424	781	788
Credit (interest expenses)					
Total ($)	6,264	1,622	2,707	11,138	4,655
Real estate secured ($)	4,484	1,176	2,076	9,094	3,536
Not real estate secured ($)	1,780	446	631	2,045	1,119
Number of farms	1,864,356	34,343	55,245	16,020	77,416

Source: USDA NASS 2017 Census of Agriculture.

Discrepancies in participation rates explain much of the population-level differences in program use between the demographic groups. NHW farms were two to three times more likely to receive any program payments than were American Indian, Asian, or Hispanic farms (Table 4). The differences were even greater for conservation programs, for which NHW farms were four to five times more likely to enroll acres or receive any payments. Participation rate differences between NHW and Black farms were also substantial, although not as large as between NHW farms and the other groups. NHW farms were about 40% more likely to receive any program payments than Black farms. For crop insurance indemnities, NHW farms were two to three times as likely to receive indemnity payments than all the other demographic groups.

NHW farms were substantially more likely to have some farm business debt than Black, American Indian, or Hispanic farms. For example, about a third of NHW farms had some interest expenses, compared to less than a quarter of Black, American Indian, or Hispanic farms. Asian farms had a similar likelihood of having debt as NHW farms.

What Causes Differences in Program and Credit Use?

There are many possible reasons why the use of agricultural programs and credit varies across demographic groups. Farmers in different demographic groups tend to be concentrated in different regions with dissimilar climates and soils (Todd et al., 2024). Variation across groups in the quantity and quality of land and productive assets they control helps determine the amount and mix of commodities produced and, consequently, the level of agricultural program use and borrowing (Hendricks et al., 2024). This link between farm size, commodity mix, and program benefits results largely from the way programs are designed. For example, the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs allocate payments according to a farm's base acres—farmland that was historically cultivated in certain field crops. For some conservation programs, payments depend on the acreage that a farm removes from production. For farms with crop insurance, potential indemnity payments increase with the number of acres enrolled.

Differences in commodity mix and farm size may also help explain variation in program and credit market participation rates. The net benefits to participating in a program or borrowing may be greater for larger-scale operations, causing farm size to be positively correlated with participation rates. The decision to borrow may also be influenced by the legal structure of land ownership. For example, "heirs' property," where multiple individuals have legal claim to the land, can make it more difficult for individuals to secure loans and coordinate the use of the land (Deaton, 2012). Such joint ownership arrangements are disproportionately common on African American-owned farms. Farmland held in trust by the federal government on American Indian reservations may also have significant restrictions on its use and development,

Table 4. Agricultural Program and Credit Participation Rates (percentage)

	Non-Hispanic White	Black, African American	American Indian, Alaskan Native	Asian	Hispanic (any race)
Agricultural programs					
Total agricultural payments	33.6	24.1	13.5	10.2	11.8
Total federal payments	33.1	23.5	13.1	9.6	11.4
Conservation payments	12.5	4.5	2.7	2.4	3.0
Conservation acres enrolled	12.5	4.5	2.7	2.4	3.0
Other federal payments	28.5	21.5	12.1	8.4	10.1
State and local payments	1.3	1.0	0.7	1.0	0.7
Crop insurance acres enrolled	19.5	8.7	5.7	16.6	9.9
Crop insurance payments	5.3	2.9	2.0	2.8	2.8
Credit (interest expenses)					
Total	33.5	22.7	24.3	30.3	25.0
Real estate secured	26.1	16.3	18.0	24.0	19.8
Not real estate secured	19.1	13.2	14.0	15.0	12.8
Number of farms	1,864,356	34,343	55,245	16,020	77,416

Note: The table shows the percentage of all farms reporting positive payments, acres, or interest expenses.
Source: USDA NASS 2017 Census of Agriculture.

which can hinder agricultural production and program participation (Leonard, Parker, and Anderson, 2020).

Differences in awareness of agricultural programs, attitudes toward programs, or language barriers might also cause variations in program participation rates across demographic groups. Asare-Baah, Zabawa, and Findlay (2018) found that lower participation rates among African American farmers could be explained, in part, by some farmers believing they would not qualify for a program or loan. Other researchers found that participation by Black farmers in agricultural programs was restricted by lack of program awareness and inadequate understanding of program rules and regulations (Hargrove and Jones, 2004). Minkoff-Zern and Sloat (2017) found that low participation rates in USDA programs by Latino immigrant farmers stemmed partly from their discomfort and distrust of government bureaucracy and from relatively limited English literacy skills, which made it more difficult to complete required paperwork. Kalo and Teigen de Master (2016) also described how the complexity of paperwork made the application process for USDA programs challenging for non-English speakers.

The use of credit might be lower for some demographic groups because of real or anticipated unequal treatment by lenders. In the 1990s and 2000s, several civil rights lawsuits were filed against the USDA Farm Service Agency (FSA). Budgets for the settlements of these cases included more than $2 billion for African American farmers, $680 million for Native American farmers, and $1.33 billion for Hispanic and women farmers (Feder and Cowan, 2013). Since these suits were settled, the USDA has enacted reforms designed to improve access to loans. The extent of ongoing racial discrimination in federal lending is an area of on-going research (e.g., Escalante et al., 2018; Dhakal, Escalante, and Dodson, 2019; Ghimire et al., 2020; Mishra, Short, and Dodson, 2024). In contrast, there have been few analyses of discrimination in private sector agricultural lending, mainly because regulations prohibit lenders from collecting personal characteristics data on loans, except for mortgage loans (U.S. GAO, 2019). However, advocacy groups reported to the Government Accountability Office (GAO) that some farmers from historically underserved groups have been dissuaded from applying for credit because of past instances of alleged discrimination.

Conclusion

The Census of Agriculture data show that among program participants, non-Hispanic white (NHW), American Indian, Asian, and Hispanic farms used many agricultural programs at roughly the same average levels. In contrast, across the full farm population, American Indian, Asian, and Hispanic farms had substantially lower average levels of program use than NHW farms. These population-level gaps, which are often not revealed by administrative data, can be explained mainly by lower program participation rates.

Farms with Black principal operators are distinct from the other demographic groups, in that they had lower average levels of program use than NHW farms both among program participants and all farms. However, as with the other groups, the population-level discrepancies were larger for the full farm population because Black farms had lower program participation rates than NHW farms.

In terms of debt, both Black and American Indian farms had substantially lower average levels of interest expenses than the other demographic groups. Black and American Indian farms were less likely to have any debt, and those that borrowed had lower interest expenses (suggesting they took smaller loans, on average). While Hispanic and NHW borrowers had similar levels of interest expenses, the average interest expense for all Hispanic farms was substantially lower than the average for NHW farms, reflecting the smaller share of Hispanic farms having any debt.

The results illustrate the importance of program participation rates in explaining population average differences in program use across demographic groups. Discrepancies in program participation may be partly explained by differences in farm size and commodity mix, which in turn determine program eligibility and influence farmers' incentives to enroll in programs. Many existing programs benefit primarily large-scale field crop producers located disproportionately in the Midwest and Plains regions (McFadden and Hoppe, 2017). For example, ARC and PLC program payments are only available for 22 field crops and are allocated mainly to producers of corn, wheat, soybean, sorghum, cotton, barley, oats, and rice (USDA-FSA, 2022). Program participation gaps might be reduced by making it easier for smaller operations to enroll in programs or by expanding program eligibility. For example, in recent years, the USDA Risk Management Agency (RMA) has enacted a series of policy changes to expand crop insurance use by specialty crop producers. To encourage enrollment by smaller-scale operations, the RMA has streamlined its application and claims processes and now allows specialty crop producers to use their own records to meet crop insurance reporting requirements (FCIC, 2022).

Other potential barriers to program participation include joint land ownership arrangements, challenges with English literacy, and limited computer skills. Lower participation rates could stem from little local availability of USDA program offices or extension services, producers' being unaware of programs, or not understanding program rules and regulations. Attitudes or preferences toward participating in programs may vary across groups according to real or perceived differences in the costs of applying for programs or the

likelihood of receiving program benefits. It is also possible that farmers are treated differently while applying for programs or loans or in how their applications are evaluated.

A better understanding of the factors affecting farmers' decision to apply for loans and agricultural programs could help policy makers and program administrators increase participation rates and population-level program use rates for underrepresented groups. The Census of Agriculture, which includes information on both program participants and nonparticipants, allowed us to measure the rates of program uptake and borrowing among all farms. Future research using data from the census or another representative survey, such as the USDA Agricultural Resource Management Survey, could explore the causes of disparities between groups. It should be feasible to quantify the extent to which differences in program use and participation rates can be attributed to variation in farm size, commodity mix, location, and other observed farm characteristics. If only administrative data on program participants are available, then statistical analyses using this group may need to account for possible biases that could arise when program participants differ from nonparticipants in ways that cannot be observed (Neuman and Oaxaca, 2004).

A more complete understanding of the reasons for differences in farm programs and credit market access will require better information about the challenges faced by farmers. Such information could be obtained by expanding surveys of the farm population to include questions about land ownership arrangements, proximity to USDA offices, the use of extension services, operators' training and educational attainment, knowledge of available programs, and farmers' opinions about the barriers they face in applying for and participating in farm and credit programs.

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Exploring Differences in Market Facilitation Program Payments by Farmer Characteristics Using ARMS Data

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JEL Classifications: J15; Q18
Keywords: Beginning farmers, Farm size, Government payments, Race

In 2018, Canada, China, the European Union, India, Mexico, and Turkey implemented retaliatory tariffs on many products, including almost all U.S. agricultural exports (Hopkinson 2018). U.S. agricultural exports targeted for retaliation were valued at $29.7 billion in 2017, with individual product lines experiencing tariff increases of 5%–140% (Regmi, 2019). Retaliatory tariffs reduced the value and volume of U.S. agricultural exports (Carter and Steinbach, 2020; Grant et al., 2021) with estimated annualized losses of $13.5–$18.7 billion (Grant et al., 2021). Trade losses were primarily concentrated in the Midwest, with Iowa, Illinois, and Kansas experiencing the highest losses (Morgan et al., 2022); tariffs were associated with declines in U.S. farm income of 16% in 2018 (Regmi, 2019). To mitigate the effects of retaliatory tariffs on U.S. farmers, the U.S. Department of Agriculture (USDA) developed a trade aid package comprised of three main parts: (i) the Market Facilitation Program (MFP) to provide direct payments to farmers; (ii) the Food Purchase and Distribution Program (FPDP) to purchase commodities targeted by tariffs and distribute them through nutrition assistance programs; and (iii) the Agricultural Trade Promotion Program (ATP), which develops alternative foreign markets for U.S. commodities (Schnepf, 2019).

While the MFP intended to provide relief from retaliatory tariffs, some studies have found that MFP payments were not equitably distributed according to the severity of trade damages (Janzen and Hendricks, 2020; Adjemian, Smith, and He, 2021; GAO, 2021; Choi and Lim, 2023). For example, Janzen and Hendricks (2020) find that payments for some commodities exceeded estimated price impacts (e.g., cotton, sorghum), while payments initially appeared to undercompensate other commodities (e.g., corn) relative to price impacts. Further, total payments were primarily destined toward large operations instead of smaller farms (GAO, 2022). In 2022, the U.S. Government Accountability Office (GAO) examined the distribution of MFP payments and found that historically underserved farmers received 3.6% of payments. In addition, Hendricks et al. (2024) examined the distribution of payments that farms were eligible to receive by producer race, based on the formulas used to calculate MFP payments using 2017 Census of Agriculture data. The authors find that differences in payments among White and Black farm operators can be largely attributed to differences in farm size.

Building on previous research related to the distribution of MFP and the concerns about disparities in government payments (GAO, 2021, 2022; Hendricks et al., 2024), this article analyzes reported MFP payments using the USDA Agricultural Resource Management Survey (ARMS) Phase III dataset from 2018–2020. Hendricks et al. (2024) uses estimated receipts using the MFP formulas and reported crop production from the 2017 Census of Agriculture, while our analysis uses ARMS data that provides information on farmers' self-reported MFP receipts. Additionally, we summarize payments by race and ethnicity, sex, and farming status (beginning farmer and limited resource) to better understand how payments varied across different farmer characteristics. We find differences in reported payments across farmer characteristics (e.g., average payments to White-only farms were higher than those for any other minority-only farm for all years in the dataset). These differences are potentially driven by several factors, including farm size and specialization.

Background on the Market Facilitation Program (MFP)

The MFP provided two rounds of payments to farmers, with payments totaling $8.6 billion in 2018 and $14.4 billion in 2019 (GAO, 2022). In 2018, MFP payments were allocated using a crop-specific rate and the payment formula was based on actual production values. The payments were intended for producers of specific commodities that were significantly affected by retaliatory tariffs, including cotton, corn, sorghum, soybeans, wheat, dairy, and hogs (Paulson, Featherstone, and Hadrich, 2020). In contrast, MFP

payments in 2019 were estimated using a county payment rate, and the payment formula was based on acres planted of eligible crops instead of actual production values. The 2019 MFP payments expanded the number of commodities eligible for payment (from 9 to 41) to include more nonspecialty and specialty crops, increased the payment limits, and had higher payment rates per acre (Schnepf, 2019; Schnitkey et al., 2019).

To qualify for a market facilitation payment, individuals had to have ownership interest in the commodity, have an USDA-FAS farm number, and comply with wetland conservation regulations. In addition, operators needed to have an average adjusted gross income (AGI) of less than $900,000 in 2013, 2014, and 2015 to quality for MFP 2018 (USDA, 2019). Last, farmers received payments in tranches, with some MFP 2018 payments disbursed in 2019 and MFP 2019 payments disbursed in 2020. As such, we include data on reported MFP payments for 2018, 2019, and 2020.

Agricultural Resource Management Survey (ARMS) Data

The ARMS is a three-phase survey jointly conducted by the USDA's National Agricultural Statistics Survey (NASS) and the Economic Research Service (ERS). Phase I of the survey is the screening phase, used to collect general farm data such as the types of crops grown and livestock inventory. Phase II collects data on production practices and costs for specific commodities. Phase III collects data on operator characteristics, farm household information, government payments, and farm finance data (U.S. Department of Agriculture-NASS, 2024).

In this study, we rely on the ARMS Phase III survey from 2018–2020 for information on farm operators and reported MFP payments. ARMS collects information on up to four operators per farm, and we use the race/ethnicity and sex of each operator to classify farms. In this context, a White-only farm refers to a farm in which all operators are White. Similarly, a Black-, Asian-, and American Indian or Alaska Native-only farm has operators of only the corresponding race. These race and ethnicity categorizations are not mutually exclusive, as some operators identify as multiracial. For example, if a farm with a single operator identifies as Black and Asian, the farm would be classified as both a Black-only and Asian-only farm. If the farm has multiple operators including a mixed-race operator, the farm would be classified as a certain type if the race of other operators matches one of the races of a mixed-race operator. For example, if a farm has two operators, one who identifies as Black and Asian and another who identifies as Black, the farm would be counted as Black-only. Similarly, the Hispanic-only categorization refers a farm in which all operators identify as Hispanic, irrespective of their race. For example, a Hispanic-only farm could have operators who identify as Hispanic-White and Hispanic-Black. Approximately, 91%–95% of farms have White-only operators; in contrast, 1.20%–1.60% of farms have Black-only operators. This percentage declined slightly between 2018 and 2020.

A limited resource (LR) farm is defined as having gross farm sales under $180,300 (2020 dollars) and whose principal operator's total household income was below the poverty level for a family of four or less than half of the county median income for 2 consecutive years (Todd et al., 2024).[1] Approximately 8%–10% of farms qualify as limited resource for each year of the data. Finally, beginning farms are operated by producers who have no more than 10 years of farming experience, and this group makes up 16%–20% of farms in the data (Table 1).

Table 1. Summary Statistics, Operator Characteristics, 2018-2020

	2018		2019		2020	
Variable	Mean	St. Err.	Mean	St. Err.	Mean	St. Err.
White-only farms (%)	94.5	0.45	91.4	0.64	94.7	0.57
Black-only farms (%)	1.57	0.27	1.30	0.25	1.20	0.22
Asian-only farms (%)	0.38	0.08	0.40	0.09	0.39	0.09
American Indian or Alaska Native farms-only (%)	1.38	0.27	1.42	0.22	1.34	0.27
Hispanic-only farms (%)	2.85	0.27	2.36	0.33	2.52	0.35
Women-only operated farms (%)	7.23	0.64	8.80	0.51	7.10	0.63
Limited resource farms (%)	9.86	0.70	8.09	0.71	8.87	0.94
Farms with only beginning farmers (%)	19.27	0.94	20.01	0.90	16.98	0.97

Notes: These estimates are weighted using survey weights, and standard errors were computed using the jackknife resampling method.
Source: Agricultural Resource Management Survey (ARMS) Phase III.

[1] Farm sales are adjusted for inflation each year.

Reported Market Facilitation Program Payments by Race

Figure 1 shows the reported average payments that farms received, including those that received zero payments, for each race and ethnicity across the 3 years of ARMS data. Because MFP payments had eligibility requirements, such as the production of certain commodities and an AGI threshold, some farms did not receive payment.

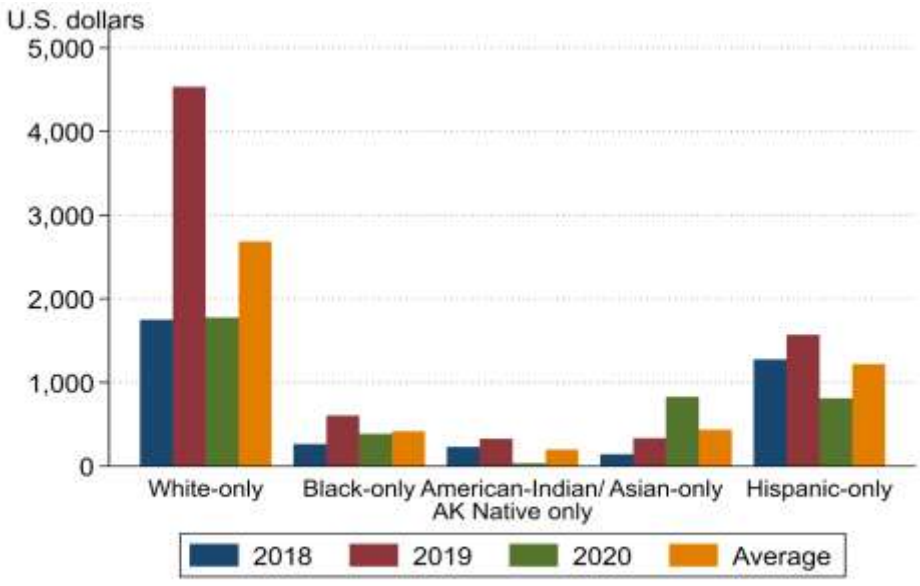
In 2018, farms with White-only operators received an average of $1,750 in MFP payments, 6.7 times more than farms with Black-only operators, which received $263 on average. In 2019 and 2020, payments for White-only farms are 7.5 and 4.6 times higher, respectively, than payments to Black-only farms (Figure 1). These differences in payment amount are comparable with Hendricks et al. (2024), who finds that farms with a White operator are eligible to receive payments 4.7 times higher than farms with a black operator.

Payments for farms with either only American Indian/Alaska Native operators or Asian operators were lower compared to those made to farms with only White operators and Black operators. American Indian/Alaska Native-only farms reported average payments of $229 in 2018, $327 in 2019, and $34 in 2020, while Asian-only farms received $141 in 2018, $335 in 2019, and $827 in 2020. Last, farms with only Hispanic operators reported higher average MFP payments than Black-only, American Indian/Alaska Native-only, and Asian-only farms but had payments 1.4–2.9 times lower than White-only farms. We also note that, with the exception of Asian-only farms, we see a peak in reported average MFP payments in 2019. This is likely due to some producers receiving both 2018 and 2019 payments during the 2019 calendar year as well as the expansion of crops covered for MFP payment. The deadline for applications for the second round of MFP payments was in December 2019 (U.S. Department of Agriculture, 2019).

Reported Payments by Women- and Men-Only Operations

Figure 2 shows the reported average payment by men- and women-only farms for each year of the data. A women-only farm refers to a farm where all operators are women. Similarly, men-only farms refer to farms operated by men. We do not include farms that have both women and men operators in this analysis. Panel A includes all farms, including those that did not receive an MFP payment, while Panel B is the conditional reported payment by year.

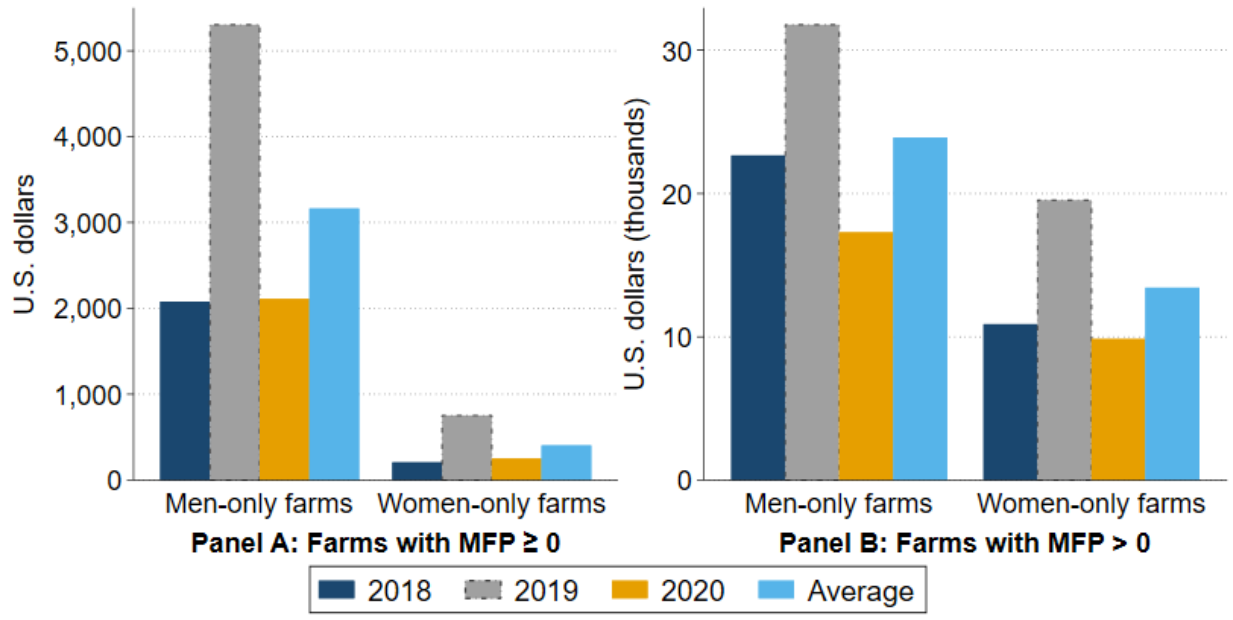
Figure 1. Reported MFP Payments by Race and Ethnicity, 2018–2020



Notes: These averages are weighted using survey weights and standard errors were computed using the jackknife resampling method. The "average" group refers to the average MFP payment across the 3 years of data (2018–2020). We omit Native Hawaiian or Other Pacific Islander group because of small sample size. Last, we omit results that are conditional on receiving payments because of small sample sizes for some groups.

Source: Agricultural Resource Management Survey (ARMS) Phase III.

Figure 2. Reported MFP Payments by Sex, 2018–2020



Notes: These averages are weighted using survey weights and standard errors were computed using the jackknife resampling method. The "average" group refers to the average MFP payment across the three years of data (2018-2020). We do not include farms that have both women and men operators in this analysis.

Source: Agricultural Resource Management Survey (ARMS) Phase III.

Including farms that did not report a payment, men-only farms report payments 7–10 times higher than women-only farms. The difference is largest in 2018; men-only farms had an average payment of $2,079, while women-only farms report an average payment of $206, a payment 10 times smaller than that of men-only farms (Figure 2, Panel A). In contrast, when looking at positive MFP payments, the difference in payments between men- and women-only farms is much smaller. From 2018 to 2020, average payments of farms with only men operators were $17,280–$31,817, while women-operated farms reported payments of $9,846–$19,537 (Figure 2, Panel B). The disparity in payments is smallest in 2019, with payments to men-only farms 1.6 times larger than payments to women-only farms.

Reported MFP Payments to Limited Resource and Beginning Farmers

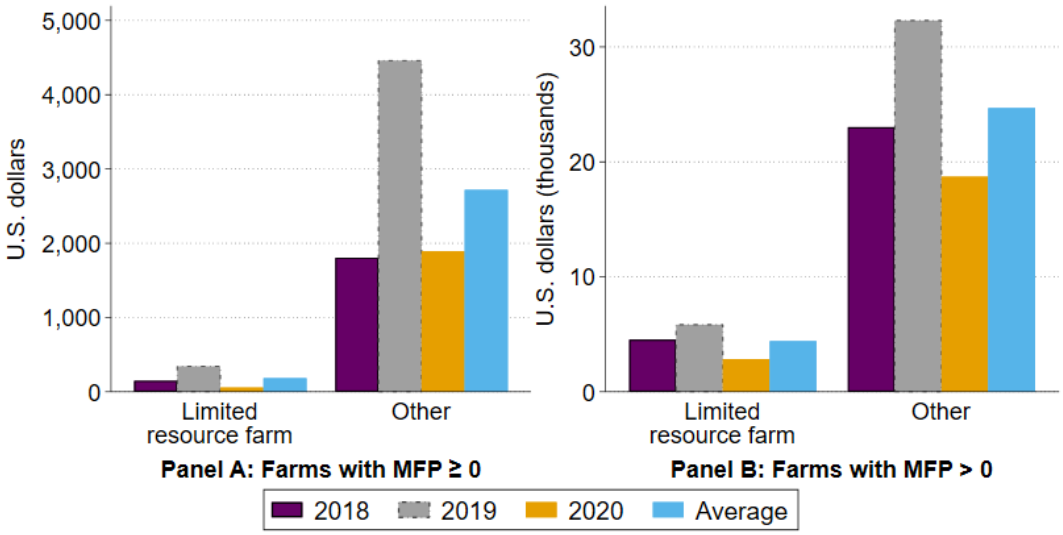
Limited resource (LR) farms had lower average MFP payments than non-LR farms. Figure 3, Panel A shows all farms, including those that did not receive an MFP payment, and the disparity between both groups is large. Compared with their LR counterparts, MFP payments to non-LR farms are 12 times higher in 2018, 13 times higher in 2019, and 33 times higher in 2020. Looking exclusively at positive MFP reported payments, the difference between these two groups is attenuated compared to the unconditional averages, with payments 5–6.5 times higher for farms not classified as limited resource. In 2019, LR farms received an average MFP payment of $5,834, while the average payment to non-LR farms was $32,304.

Finally, Figure 4 highlights the unconditional and conditional average payments to farms operated by beginning farmers. Overall, beginning farmers reported smaller MFP payments compared to more experienced farmers. Panel A shows a large difference across all 3 years of the dataset when including farmers who did not receive a payment in the average calculation. Similar to other groups, payments were highest in 2019. Panel B shows a smaller difference in conditional payments between beginner and non-beginner farmers. In both 2018 and 2019, payments to non-beginning farmers were higher. However, in 2020, farms operated by beginning farmers reported an average MFP payment of $24,979, 49% higher than the reported average payment to other farmers (Figure 4, Panel B).

Differences in Farm Size by Race and Ethnicity

Our descriptive analysis shows a similar result to Hendricks et al. (2024) in that there are differences in the size of MFP payments across racial groups in the ARMS data. While comparing mean reported payment receipts cannot identify the sources of these differences, in their analysis Hendricks et al. (2024) decomposed

Figure 3. Reported MFP Payments by Limited Resource (LR) Status, 2018–2020



Notes: These averages are weighted using survey weights, and standard errors were computed using the jackknife resampling method. The "average" group refers to the average MFP payment across the 3 years of data (2018–2020).

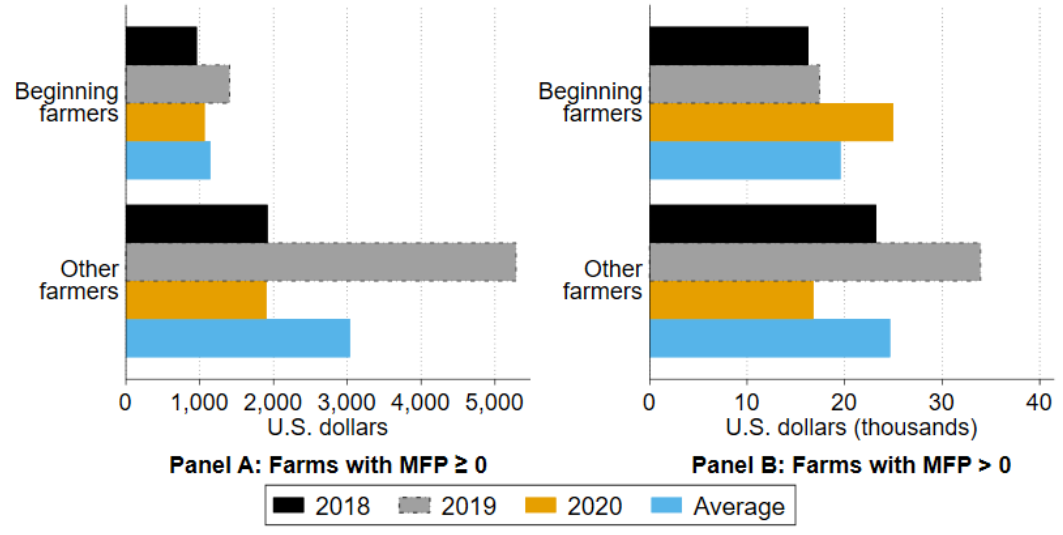
Source: Agricultural Resource Management Survey (ARMS) Phase III.

expected payments, finding that these differences can be attributed to farm size and the mix of crops produced.

Figure 5 presents the average harvested acres by race and ethnicity between 2018 and 2020. White-only farms on average harvested 162 acres in 2018, 157 acres in 2019, and 154 acres in 2020. Conversely, farms with only Black operators harvested 27–38 acres during the study period.

Similar to Black-only farms, Asian-, American Indian-, and Hispanic-only farms harvested fewer acres than White-only farms between 2018 and 2020. Harvested acres by Asian-only farms increased from 26 acres in

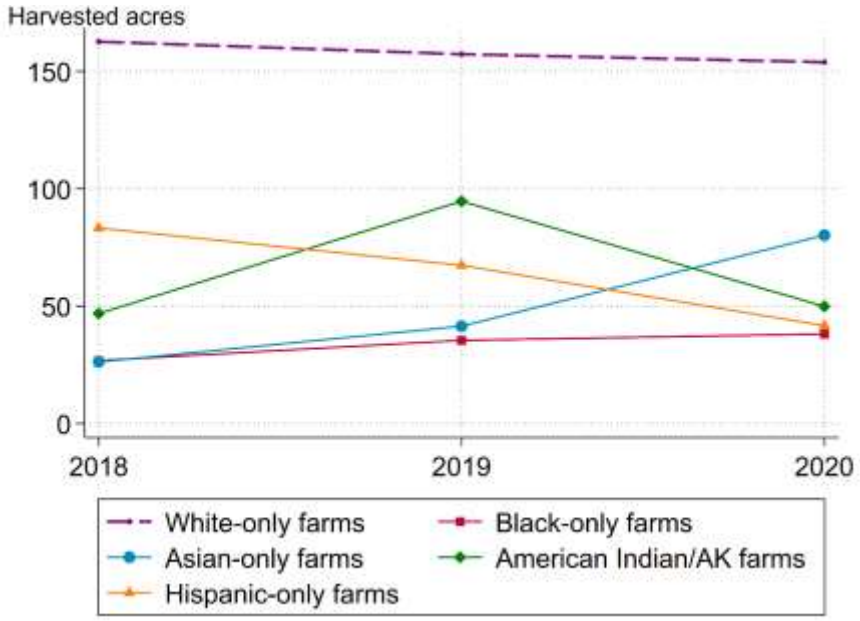
Figure 4. Reported MFP Payments by Beginning Farmer Status, 2018–2020



Notes: These averages are weighted using survey weights, and standard errors were computed using the jackknife resampling method. The "average" group refers to the average MFP payment across the 3 years of data (2018–2020).

Source: Agricultural Resource Management Survey (ARMS) Phase III.

Figure 5. Average Harvested Acres by Race and Ethnicity, 2018–2020



Notes: These averages are weighted using survey weights, and standard errors were computed using the jackknife resampling method**.**

Source: Agricultural Resource Management Survey (ARMS) Phase III.

2018 to 80 acres in 2020, while Hispanic-only farms trended downward in the 3-year period, with average harvested acres of 42–83 acres.

While the payment formulas for MFP relied on production values in previous years or planted acres, the differences in harvested acres across racial groups in the ARMS survey suggests that White-only farms tend to be much larger than farms operated by minorities. The correlation coefficient between harvested acreage and reported MFP payments ($\rho = 0.60$) supports the theorized results in Hendricks et al. (2024) that farm size is an important factor in determining payment amount.

Conclusion

The MFP was an ad hoc program that supported farmers when retaliatorily tariffs affecting U.S. agricultural exports were imposed in 2018 and 2019. MFP payments varied across farms based on production levels, acreage, geography, and crop mix. Using ARMS survey data, this study evaluates differences in reported payments across diverse groups of farms and farmers including different racial and ethnic groups, farms operated by women only, LR farms, and farms operated by beginning farms.

Overall, farms with only White operators reported receiving MFP payments 4.6–6.7 times higher than farms with only Black operators; similar differences exist when focusing on farms with only Asian, American Indian/Alaska Native, or Hispanic producers. Like Hendricks et al. (2024), we find evidence using the self-reported receipts that this difference in MFP payments may be driven in part by larger farm sizes among White farmers. We find a positive correlation between acreage and MFP payments in ARMS suggesting that as farm size increases, so do MFP payments. Throughout the sample period the average farm size is higher for White farms than other groups.

This article highlights the important differences in reported ad hoc support across several dimensions of diversity in U.S. farms and farmers. For example, women-only farms, limited resource operators, and beginning farmers all received lower levels of MFP payments compared with their counterparts. More research is needed to better understand the drivers of these disparities, the interaction of effects across different diverse groups, and how U.S. farms participate in and benefit from ad hoc support programs.

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Consumer Preferences for Value-Added Foods from Black-Owned Food Companies

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JEL Classifications: D12, D30
Keywords: Black-owned, Consumer behavior, Food marketing

Entrepreneurship is seen as a key mechanism for economic mobility, especially for Black, Indigenous, and People of Color (BIPOC) entrepreneurs, who often lack resources in a competitive marketplace (Portes and Zhou, 1992). Developing successful entrepreneurial ventures can significantly impact a founder's upward wealth mobility (Kroeger and Wright, 2021). Some Black and African American (referred to as Black henceforth) entrepreneurs seek this mobility by founding startups, despite financial, economic, and social challenges (Santos et al., 2024).

Black-owned businesses have positively impacted the U.S. economy and have the potential to play a more important role in increased and sustained economic growth. Despite contributing over $200 billion to the economy between 2012 and 2017, there remains a large discrepancy between the proportion of Black U.S. citizens and Black-owned businesses (U.S. Senate Joint Economic Committee, 2023). In 2023, 13.7% of U.S. citizens identified as Black (U.S. Census Bureau, 2023). However, a 2023 study using data from 2021 suggested that only 3% of the Black population in the United States owned a business (Leffert, 2023). Additionally, Black-owned businesses only accounted for approximately 1% of gross U.S. revenue in 2021, suggesting relative concerns about profitability (Leffert, 2023).

Barriers such as disparities in existing financial structures, lack of generational wealth, and other systemic barriers adversely affect Black entrepreneurs (Dua et al., 2020; Fairlie, 1999; Fairlie and Robb, 2007; Fairlie, Robb, and Robinson, 2022; Rakshit and Peterson, 2024). The COVID-19 pandemic magnified these challenges, with as many as 41% of Black-owned businesses closing during its early stages (Fairlie, 2020). These findings offer evidence of a more disparate relationship between Black-owned businesses and Black representation in the United States than previously reported.

This study was motivated by a review of existing literature, which collectively identified challenges faced by Black entrepreneurs but provided little insight into solutions to improve their success. Specifically, the literature has not focused on providing actionable items for Black entrepreneurs within the agri-food community. The challenges faced by Black and other BIPOC entrepreneurs have been explicitly documented by a series of racial discrimination lawsuits against the USDA (Carpenter, 2012). These lawsuits include Pigford v. Glickman, Keepseagle v. Vilsack, and Garcia v. Vilsack, each accusing the USDA of racial discrimination in its Farm Service Agency (FSA) lending program. In each case, the USDA was proven discriminatory with its lending practices and ordered to pay restitution to impacted agricultural producers (Cowan and Feder, 2008; Feder and Cowan, 2013). Specifically, in the Pigford v. Glickman case and a subsequent Pigford II case, the USDA was ordered to pay approximately $2 billion to Black farmers. Despite the heightened pressure on the U.S. government from these cases, the literature suggests that Black farmers continue to face inequitable outcomes, primarily from federal government programs, that could hinder economic outcomes (Russell, Hossfeld, and Mendez, 2021). In 2024, the USDA released an additional $2.2 billion to Black farmers who had faced discrimination from the USDA as recently as 2021 (USDA, 2024a). Although no explicit studies support similar inequities in the value-added food industry, evidence suggests that wages for Black workers may have been suppressed in the fast food industry (Capodilupo, 2023).

The entrepreneurial literature suggests that there are challenges for Black entrepreneurs, regardless of the specific industry, associated with their racial background. For example, Yang and Kacperczyk (2024) found that Black entrepreneurs are about 55% less likely than their white counterparts to attain steady cash flows from entrepreneurial ventures, despite having similar tendencies to start new ventures. Further, research has shown that these startups have significantly less capital

flow and, therefore, must contribute a higher ratio of personal funds to begin their businesses, putting them at an inherent disadvantage (Fairlie, Robb, and Robinson, 2022). While the existing body of literature focusing on challenges faced by Black value-added food entrepreneurs is limited, the literature available about producers suggests that there have been significant challenges associated with racial identity (Wilson, 2023). However, most previous literature focuses on identifying challenges, with little suggesting a sustainable path forward.

This study addresses this gap by exploring preferences for value-added food products from Black entrepreneurs and identifying the types of consumers who prefer the products to increase the likelihood of successful marketing. Some consumers may be interested in supporting Black-owned businesses to reduce the historical obstacles faced by Black entrepreneurs, and the objective of this study is to shed light on the products preferred and the characteristics of potential consumers. The results of this study are helpful to Black entrepreneurs, retailers interested in stocking Black-owned food products, and policymakers who seek to increase the proportion of Black-owned businesses.

Potential Benefit of Labeling a Food Product as Black-owned

Labeling a product as Black-owned can provide a key point of differentiation for entrepreneurs across industries, especially in the competitive food sector. (Drexler et al., 2018; McFadden and Lusk, 2018). In a dynamic consumer environment, where preferences consistently evolve, product differentiation is essential for capturing market share, building brand loyalty, and increasing sales. Entrepreneurs invest in differentiating products through various means, such as quality, taste, packaging, branding, and sustainable production practices (McCluskey and Loureiro, 2003).

Communicating that a product is Black owned could attract socially conscious consumers who wish to support value-added food with this attribute. Enhancing marketing strategies is a potential mechanism to improve economic outcomes for these entrepreneurs. As consumers become more socially conscious, they may select products based on the benefits provided to the broader community (McCluskey, 2015). Credence attributes relating to how food is made, such as the localness of the product or specific production techniques, have become increasingly desirable to the consumer. However, consumer preferences for food produced by entrepreneurs who identify as Black have yet to be studied extensively, despite the potential parallel to other desired socially conscious attributes, such as products produced by indigenous groups (Yang, Hobbs, and Natcher 2020). We attempt to fill this knowledge gap through this study by leveraging a discrete choice experiment, included in an online survey, which we analyze to determine (i) overall consumer preference for food produced by a Black entrepreneur and (ii) specific consumer groups more likely to purchase the Black-owned option.

Study Design and Data Analysis

Consumers made 12 simulated purchasing decisions for barbecue (BBQ) sauce, beef jerky, or honey within the discrete choice experiment (DCE). These products were chosen by conducting market research on food offerings specifically marketed as Black owned via a label or other form of consumer communication. Nationally, multiple Black-owned businesses market each of the three selected products, allowing generalization of findings and benefits across the food supply chain.

For each of the 12 purchasing decisions made in the DCE, respondents were presented with two product options that varied by price, whether a Black-owned business made the option, and whether the option was produced locally (see Appendix Figure A1 for an example). The product attribute of interest for this study was whether the option was made by a Black-owned business, which would likely be presented in the retail environment as a product label with a Black ownership claim. While the local attribute was not the main attribute of interest for this study, it was included for several reasons. When conducting market research on the products to include in the study, it was noticed that several Black-owned food businesses also marketed products as local. Additionally, including another attribute could reduce social desirability bias, where respondents select the Black-owned option to look better to others or feel better about themselves (Larson, 2019), which theoretically could be more likely to occur if only one attribute was presented. Also, including the local attribute provided another production method claim to compare results for the Black-owned attribute. Lastly, including local allows us to determine the marginal impact that Black-owned may gain in combination with a local claim. An “opt-out” option was also presented for each purchasing decision so that consumers were not forced to select a product.

Respondents were given a “cheap talk” script (Lusk, 2003) to help reduce bias in their hypothetical decision making (see Appendix Figure A2 for an example). They were also asked demographic questions to understand the association between characteristics and product selection. The demographic questions asked and response options provided to respondents are shown in Appendix Table A1, and Appendix Table A2 presents the summary statistics for demographic questions. Survey data were collected from 2,997 U.S. consumers in January 2024; 1,000 consumers made selections for BBQ sauce, 999 for beef jerky, and 998 for honey. The survey was created on the Qualtrics survey design platform and distributed to an online panel maintained by Prolific in January 2024. To be eligible for the survey, respondents had to be at least 18 years old and willing

to consume the product tested. Due to the nature of the products selected for this study (e.g., beef jerky), consumption, not primary shopper status, was used as a qualifier to determine the preferences of the average consumer.

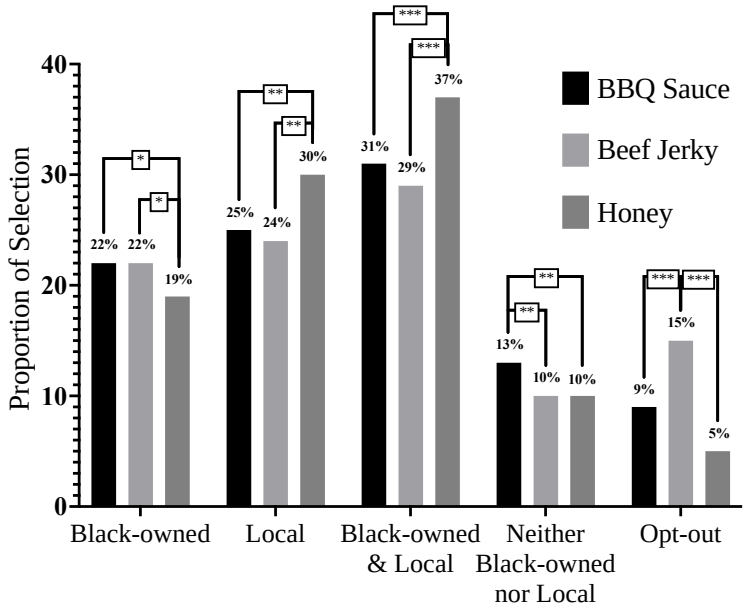
The data collected were analyzed to test two research questions. The first research question sought to determine consumer preference for a product made by a Black entrepreneur compared to a locally-made product. Conditional logit models were estimated for each product (i.e., BBQ sauce, beef jerky, and honey). A product option could be either Black-owned only, Local only, Black-owned & Local, or Neither Black-owned nor Local, and each option was presented six times across the 12 simulated purchasing decisions. Coefficients estimated by the conditional logit models provide insight into how consumers preferred the various product options, given the three price levels (i.e., BBQ sauce: $5.99, $7.99, $9.99; beef jerky: $13.99, $17.99, $21.99, and honey: $5.99, $6.99, $7.99).

The second question sought to determine the consumer demographics associated with selecting Black-owned products and the intensity of this selection. To do this, the data were analyzed in a two-step process (Cragg, 1971). The first step determined the demographic characteristics associated with selecting a Black-owned only option or a Black-owned & Local option at least once by estimating binary probit models. The second step removed the consumers who never selected a Black-owned only option or a Black-owned & Local option to determine the demographic characteristics associated with selecting these product options more often by estimating Poisson regression models. This model allows us to estimate the associations of consumer demographics with the frequency of selecting a Black-owned only option or a Black-owned & Local option.

Results

The first research question sought to determine consumer preference for a product made by a Black entrepreneur compared to a locally-made product. Figure 1 illustrates the proportion of each product option that was selected. A product option could be either Black-owned only, Local only, Black-owned & Local, or Neither Black-owned nor Local. Each option was presented six times across the 12 simulated purchasing decisions (two product options and an opt-out option per scenario). Therefore, if a product option were selected every time it was presented, the selection proportion in Figure 1 would equal 50%. Across the 12 simulated purchasing decisions, the Black-owned honey was selected at an average of 19%, or 2.28 times out of six. It was selected at slightly higher rates, 22%, for BBQ sauce and beef jerky. The Local only and Black-owned & Local options were selected at significantly higher rates for honey, which is somewhat intuitive given that the demand for locally produced honey is typically higher than nonlocal (Wu et al., 2015). The Neither Black-owned nor Local and the opt-out options were selected the least often for all the products.

Figure 1. Selection Proportions of Three Products across the Choice Options



Note: Single, double, and triple asterisks (*, **, ***) represent p-values of < 0.10, 0.05, and 0.01, respectively, from tests of differences in proportions.
Source: Prepared by the authors.

Table 1. Conditional Logit Model Results from the Simulated Purchasing Decisions

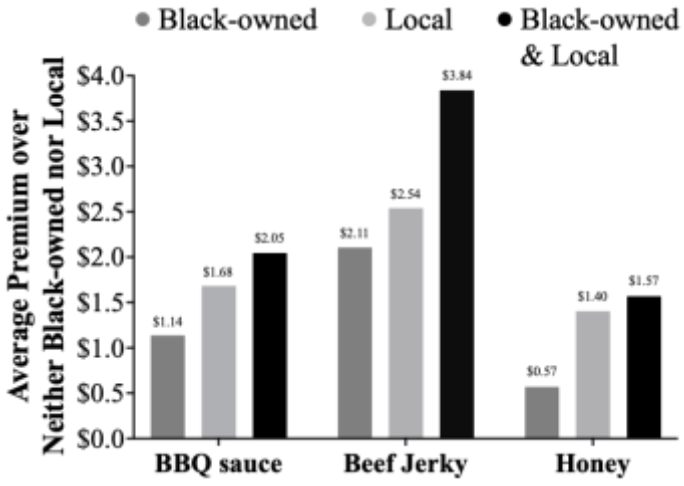
	BBQ Sauce		Beef Jerky		Honey	
Attribute	**Coeff.**	**Std. Err.**	**Coeff.**	**Std. Err.**	**Coeff.**	**Std. Err.**
Black-owned	5.850***	0.085	7.961***	0.110	8.980***	0.146
Local	6.156***	0.090	8.138***	0.114	9.839***	0.159
Black-owned & Local	6.360***	0.096	8.667***	0.137	10.010***	0.165
Neither Black-owned nor Local	5.212***	0.091	7.104***	0.124	8.392***	0.156
Price	-0.561***	0.010	-0.407***	0.007	-1.031***	0.021
Log-likelihood	-8,322		-7,846		-7,115	
Number of observations	35,964		36,000		35,928	
Number of clusters	1,000		999		998	

Note: Triple asterisks (***) denote a *p*-value of < 0.01. Standard errors were clustered by the respondent.
Source: Prepared by the authors.

The results from the conditional logit models (Table 1) confirm the results presented in Figure 1. All the coefficients estimated for the product options were significant at a p-value less than 0.01, indicating that the products were selected significantly more than the opt-out option (used as the base in estimation). Also, the order of coefficients by magnitude matches the order of proportions in which the products were selected. From the estimated coefficients, it is clear that Black-owned & Local was the most preferred of the options, and Neither Black-owned nor Local was the least preferred. The Local option was preferred to the Black-owned option across all products. Post-estimation Wald tests confirmed significant differences between the coefficients estimated for the options at a p-value less than 0.01 for all products. The price coefficient was negative, consistent with utility maximization theory, in which consumers always maximize utility while minimizing cost (Herrnstein et al., 1993).

Willingness to pay (WTP) was estimated using the conditional logit results. Figure 2 shows the average premiums for the Black-owned, Local, Black-owned & Local products over the Neither Black-owned nor Local product. For Black-owned products, consumers were willing to pay $1.14 more for BBQ sauce, $2.11 more for beef jerky, and $0.57 more for honey. In comparison, the premiums for Local products were $1.68 for BBQ sauce,

Figure 2. Average Premiums for the Black-Owned, Local, Black-Owned & Local Products over the Neither Black-Owned Nor Local Product from the Simulated Purchasing Decisions



Source: Prepared by the authors.

Table 2. Associations of Demographic Variables on Black-owned and Local Products in Hurdle Selection Model (Stage 1 Probit Model)

	BBQ sauce				Beef Jerky				Honey			
	Black-owned		Black-owned and Local		Black-owned		Black-owned and Local		Black-owned		Black-owned and Local	
Variable	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Female	0.054	0.102	-0.061	0.140	0.225**	0.110	0.418***	0.144	-0.149*	0.090	0.439**	0.179
Generation Z	0.511**	0.242	4.404***	0.222	0.316	0.253	0.830***	0.312	0.106	0.204	-0.548	0.470
Millennial	0.432***	0.158	0.334	0.206	0.091	0.213	0.341	0.226	-0.241	0.162	-0.406	0.420
Generation X	0.072	0.168	-0.101	0.212	-0.277	0.221	0.385	0.251	0.126	0.175	0.224	0.493
Bachelor's degree	0.146	0.118	-0.023	0.158	0.351***	0.126	0.297*	0.166	0.086	0.106	0.109	0.205
Professional degree	0.224	0.154	-0.042	0.211	0.176	0.163	0.284	0.214	0.134	0.146	-0.039	0.264
Urban	-0.133	0.124	-0.215	0.165	-0.174	0.124	0.042	0.164	0.253**	0.109	0.076	0.179
Rural	-0.235*	0.138	0.021	0.185	-0.053	0.155	0.053	0.197	-0.385***	0.122	0.112	0.250
Northeast	0.070	0.152	0.054	0.217	-0.047	0.179	-0.041	0.223	-0.259*	0.144	-0.176	0.275
South	0.091	0.134	0.088	0.190	-0.137	0.153	0.003	0.199	-0.099	0.127	0.157	0.259
West	-0.004	0.163	-0.143	0.214	-0.024	0.172	0.016	0.215	-0.345**	0.140	-0.276	0.276
White	-0.080	0.239	0.241	0.288	0.141	0.191	-0.170	0.274	-0.397**	0.180	-0.070	0.300
Black	0.690**	0.349	0.431	0.402	0.252	0.247	0.235	0.400	0.052	0.236	-0.339	0.355
Asian	0.119	0.319	0.295	0.430	-0.048	0.256	-0.497	0.341	-0.061	0.232	-0.306	0.388
Hispanic	0.035	0.211	0.438	0.332	0.022	0.181	-0.163	0.201	0.276	0.195	-0.366	0.277
Republican	-0.267*	0.137	-0.297*	0.173	0.000	0.151	0.048	0.176	-0.194	0.125	-0.411*	0.228
Democrat	0.049	0.124	0.440***	0.169	0.341***	0.122	0.419***	0.157	0.208**	0.103	0.353*	0.202
Income $50,000–$99,999	-0.067	0.123	0.246	0.158	-0.032	0.126	0.155	0.163	-0.018	0.112	0.333*	0.190
Income $100,000–$149,999	0.003	0.157	0.397*	0.208	-0.138	0.161	0.021	0.210	0.009	0.145	0.610*	0.335
Income $150,000+	-0.129	0.178	0.668**	0.267	0.253	0.221	0.106	0.262	-0.263	0.162	0.644*	0.369
Constant	0.810***	0.313	0.962***	0.367	0.808***	0.310	0.858**	0.356	1.164***	0.276	1.917***	0.614
Log Pseudo Likelihood	-2,306		-1,092		-1,977		-1,068		-3,214		-660	
Number of observations	6,000				5,994				5,988			
Number of clusters	1,000				999				998			

Note: Single, double, and triple asterisks (*, **, ***) represent *p*-values of < 0.10, 0.05, and 0.01, respectively. Standard errors were clustered by the respondent.

$2.54 for beef jerky, and $1.40 for honey. An additional Local claim coupled with a Black-owned claim increased WTP for the Black-owned products by an average of $0.91 for BBQ sauce, $1.73 for beef jerky, and $1.00 for honey.

The second question sought to determine the consumer demographics associated with selecting Black-owned products. Table 2 presents the results from the first step that determined the demographic characteristics associated with selecting a Black-owned only option or a Black-owned & Local option at least once. Compared to the base categories (i.e., males, nonbinary, and other), females were significantly more likely to select the Black-owned & Local options for beef jerky and honey at least once. Compared to older generations, Generation Z and Millennials were more likely to select the Black-owned BBQ sauce at least once, and Generation Z was also likelier to select the Black-owned & Local BBQ sauce and beef jerky at least once. Consumers with a bachelor's degree were more likely to select the Black-

Table 3. Demographic Indicators Impact on Black-Owned and Black-Owned & Local Products in Hurdle Frequency Model (Stage 2)

	BBQ sauce				Beef Jerky				Honey			
	Black-owned		Black-owned & Local		Black-owned		Black-owned & Local		Black-owned		Black-owned & Local	
Variable	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
Female	-0.027	0.075	0.048	0.103	-0.036	0.044	-0.002	0.079	0.033	0.072	0.301***	0.100
Generation Z	0.146	0.170	-0.045	0.249	0.086	0.096	0.006	0.160	0.084	0.151	-0.190	0.226
Millennial	0.131	0.148	0.135	0.182	0.111	0.087	-0.172	0.144	0.137	0.136	0.157	0.179
Generation X	0.063	0.155	0.018	0.197	0.144	0.100	-0.040	0.154	0.041	0.143	-0.011	0.195
Bachelor's degree	0.005	0.087	-0.069	0.123	-0.051	0.049	-0.039	0.090	0.102	0.082	-0.131	0.118
Professional degree	0.038	0.106	0.028	0.148	-0.005	0.068	-0.009	0.124	-0.014	0.107	-0.384**	0.163
Urban	0.063	0.096	0.302**	0.122	0.099*	0.052	-0.035	0.093	0.198**	0.080	-0.055	0.119
Rural	0.085	0.112	0.412***	0.144	-0.048	0.055	0.153	0.102	-0.008	0.108	0.156	0.140
Northeast	0.200*	0.113	0.067	0.159	0.017	0.078	-0.062	0.128	-0.125	0.108	-0.006	0.162
South	0.032	0.098	0.126	0.140	-0.002	0.065	-0.010	0.107	-0.149**	0.089	0.032	0.142
West	-0.001	0.128	0.141	0.171	-0.092	0.067	-0.154	0.122	-0.095	0.100	0.209	0.157
White	-0.162	0.153	0.103	0.244	-0.109	0.088	-0.079	0.146	-0.033	0.123	-0.074	0.176
Black	0.599***	0.201	0.347	0.296	0.301**	0.125	0.178	0.186	0.812***	0.167	0.166	0.217
Asian	-0.188	0.184	-0.033	0.307	-0.189*	0.099	-0.223	0.189	-0.320**	0.151	-0.696***	0.257
Hispanic	0.060	0.148	0.150	0.203	0.021	0.064	0.073	0.121	0.031	0.146	-0.088	0.205
Republican	-0.100	0.112	-0.034	0.155	-0.011	0.066	0.016	0.122	0.137	0.110	0.032	0.149
Democrat	0.122	0.087	0.329***	0.126	0.059	0.048	0.153*	0.092	0.125	0.078	0.253**	0.117
Income $50,000–$99,999	0.119	0.096	0.152	0.136	-0.015	0.050	-0.002	0.091	0.027	0.087	0.294**	0.125
Income $100,000–$149,999	0.040	0.113	0.334**	0.154	0.041	0.072	0.062	0.124	-0.045	0.110	0.309*	0.159
Income $150,000+	-0.056	0.160	0.510***	0.187	-0.106	0.075	0.176	0.137	-0.097	0.116	0.382**	0.182
Log Pseudo Likelihood	-8,573		-10,939		-8,272		-10,125		-7,074		-11,333	
Number of observations	5,148		5,682		5,328		5,700		4,386		5,820	
Number of clusters	858		947		888		950		731		970	

Note: Single, double, and triple asterisks (*, **, ***) represent *p*-values of < 0.10, 0.05, and 0.01, respectively. Standard errors were clustered by the respondent.

Source: Prepared by the authors.

owned beef jerky at least once. For Black-owned honey, where a consumer resides had a significant effect on selecting at least once. Compared to suburban consumers, urban consumers were more likely and rural consumers were less likely to select the Black-owned honey at least once. Also, compared to Midwestern consumers, consumers in the West were less likely to select the Black-owned honey at least once. Black consumers were more likely to select the Black-owned BBQ sauce at least once, and White consumers were less likely to select the Black-owned honey at least once.

Consumers who identified as Democrats were likelier to select all Black-owned products at least once, as well as beef jerky that was Black-owned & Local at least once. Consumers with an income of over $150,000 were likelier to select Black-owned & Local BBQ sauce at least once.

Table 3 presents the results from the second step that determined the demographic characteristics associated with selecting these product options more often, after

removing the consumers who never selected a Black-owned only option or a Black-owned & Local option. Female consumers selected the Black-owned & Local honey more often than other genders, while consumers with a professional degree selected it less often. Compared to suburban consumers, those in urban and rural areas selected the Black-owned & Local BBQ sauce more often, and urban consumers also selected the Black-owned honey more often. Consumers in the South selected the Black-owned honey less often than those in the Midwest. Black consumers selected all Black-owned products more often, while Asian consumers selected Black-owned and Black-owned & Local honey less often. Democrats selected the Black-owned & Local BBQ sauce and honey products more often, as did consumers with an income over $150,000. Also, consumers with an income of $50,000–$99,999 selected the Black-owned & Local and honey more often than lower-income consumers, and consumers with an income of $100,000–$149,999 selected the Black-owned & Local BBQ sauce more often.

In both Stage 1 and Stage 2, certain demographic factors consistently influenced preferences for Black-owned and Black-owned & Local products. Urban consumers demonstrated a significant positive association with both choosing Black-owned honey at least once and purchasing it more frequently, whereas Black consumers showed similar associations for Black-owned BBQ sauce. Female consumers were more likely to choose Black-owned & Local honey at least once and select the product more often. Additionally, consumers with an income of $100,000 or more were significantly more inclined to select Black-owned & Local BBQ sauce and honey at least once and to continue purchasing these products. Democrats also showed a consistent positive association with all Black-owned & Local products (BBQ sauce, beef jerky, and honey), being more likely to choose them initially and to purchase them repeatedly. These consistent findings across stages and product types underscore the robustness of these demographic indicators in shaping consumer behavior toward Black-owned and Black-owned & Local products.

Concluding Thoughts

Black entrepreneurs in the American food industry face significant challenges despite their substantial presence throughout the value chain. These challenges include limited access to capital, racial discrimination, and other systemic barriers. We propose marketing Black ownership as a product label to address these economic hurdles. This approach can serve as a unique selling point, drawing the attention of consumers inclined to support small businesses and those who value diversity, equity, and inclusion. Consumers increasingly seek to make socially conscious purchasing decisions, and a Black-ownership product label provides a straightforward way to do so. This could enhance brand loyalty and drive repeat purchases, as customers feel connected to the story and mission behind a product.

This study found that marketing Black ownership could significantly impact the success of a product. The results show that targeting Black entrepreneurs near urban areas with high Democrat affiliation, Black representation, and high household incomes could be particularly effective. There may also be room to grow markets as younger generations have increased purchasing power. The variation across product groups and consumer preferences for these products indicates that specific product types may resonate differently with various demographic segments, highlighting the importance of tailored marketing strategies. Understanding these nuanced preferences is crucial for Black food entrepreneurs aiming to effectively position their products in the market.

Moreover, there was a stronger preference for local foods relative to Black-owned. This suggests that consumers generally prioritize localness in purchasing decisions, but a valuable niche remains for promoting Black-owned food products. Some of the stronger preferences for local foods in this study could be attributed to including honey as a product of interest, which yielded a strong preference for the local attribute. We found that several Black businesses producing the products tested in our study marketed the localness of their offerings, despite there being no clear literature connecting the two as complementary claims. Leveraging the appeal of local food could also potentially enhance the attractiveness of Black-owned products if marketed jointly, as they likely appeal to similar yet distinct characteristics and could potentially yield a compounding effect. There were higher (and lower) preferences for Black-owned food within certain demographic groups. However, different respondent characteristics were associated with selection across the three value-added products in this study, indicating that targeted marketing for specific Black-owned product types may be more effective with certain consumers.

As with all research, this study is not without limitations. First, the sample is not nationally representative because a willingness to consume the product presented in the survey was a qualifier to take the survey. Around half of our sample indicated being affiliated with the Democratic party, for example, and previous research has shown that political affiliation is associated with consumer preferences for race in food issues (Kalaitzandonakes, Ellison, and White, 2023). Additionally, the product selections were nonbinding, which can introduce hypothetical bias. While we employed a “cheap talk” script to mitigate this bias, it is important to note that actual purchasing behavior may differ from the responses observed in the experiment (Lusk, 2003; Hensher, 2010).

Understanding consumer preferences can help Black-owned businesses optimize their marketing efforts, fostering greater support and success in diverse markets. Additionally, tailoring marketing campaigns to resonate with the target population would enhance the opportunity for repeat customers. The results from this study can provide insight to policy makers and funding agencies. For example, the findings that local claims are essential for the success of Black-owned food products are relevant to the USDA's initiative to improve the resilience of local food systems (USDA, n.d.). Moreover, USDA programs can impact the success of Black-owned value-added products, similar to the success of the USDA-supported Brooksmade Gourmet Foods (USDA, 2024b). Fostering the success of Black-owned food businesses requires a multifaceted approach, combining strategic marketing and consumer insights with these supportive policies. By leveraging both the appeal of Black ownership and the growing demand for local foods, entrepreneurs can build stronger connections with their target audiences. Policy makers and funding agencies must also continue supporting initiatives that promote inclusivity and equitable access to resources, further empowering Black entrepreneurs to thrive in the competitive food industry. Through these efforts, Black-owned businesses can continue contributing to a more diverse, resilient, and inclusive food system in the United States.

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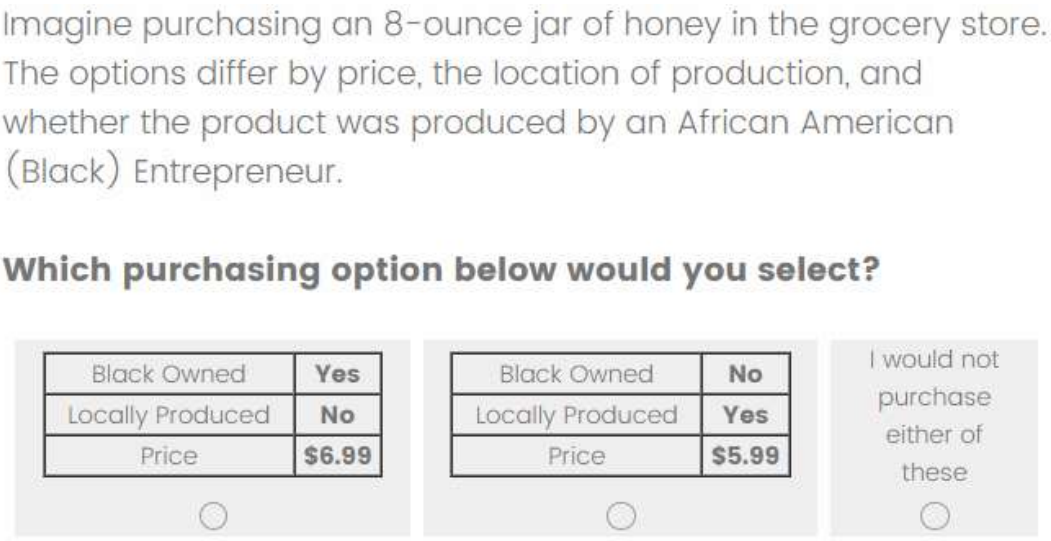
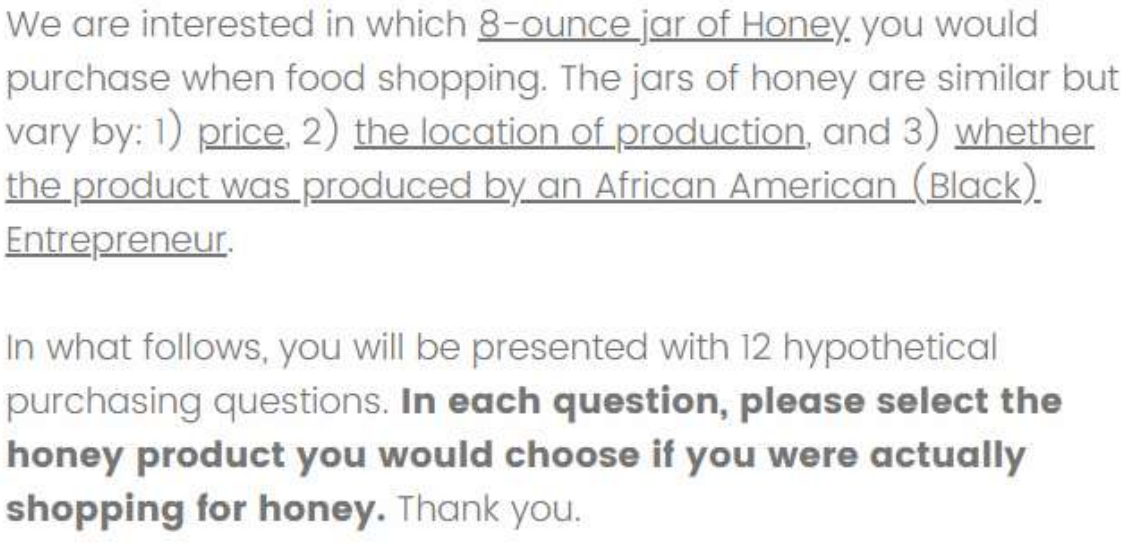
Appendix

Appendix Figure A1. Discrete Choice Question Example (Honey)



Source: Prepared by the authors.

Appendix Figure A2. Cheap Talk Example (Honey Discrete Choice Experiment)



Source: Prepared by the authors.

Appendix Table A1. Demographic and Moderating Variable Questions

Question	Response Options
What is your age? Please provide your age in years below.	Continuous variable indicating the years since birth
What gender do you most identify with?	Male, Female, Non-binary/Third Gender, Prefer not to respond
What is the highest level of education you have completed or the highest degree you have received?	Less than High School, High School/GED, some college, 2-Year Degree (Associate), 4-Year Degree (Bachelor), Graduate/Professional Degree (M.S., PhD., M.D., J.D., etc.)
Are you Spanish, Hispanic, or Latino?	Spanish, Hispanic, Latino, No
Choose one or more races that you consider yourself to be:	White, Black or African-American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Other (fill in the blank)
In which Region do you live?	Northeast, Midwest, South, West (Respondents provided with a map)
In which of these categories do you feel that your primary place of residence fall?	Urban, Suburban, Rural, Other (fill in the blank)
Income information is very important. What is your household income before taxes? Please provide the best estimate for your entire household.	Range from < $10,000 to > $150,000 in $10,000 increments
What is the zip code of your primary residence?	Fill in the blank.
What is your political affiliation?	Republican, Democrat, Third-Party, Independent, Other

Source: Prepared by the authors.

Appendix Table A2. Summary Statistics of Demographic Variables

Variable	Sample (*N* = 2,997)	BBQ DCE (*N* = 1,000)	Jerky DCE (*N* = 999)	Honey DCE (*N* = 998)
Age[a]	40.91	42.34	39.53	40.85
	(13.28)	(13.13)	(13.13)	(13.34)
Gender				
Female	48.58	45.20	52.85	47.70
Male	49.18	53.00	44.54	50.00
Nonbinary	1.87	1.60	2.10	1.90
Other	0.37	0.20	0.50	0.40
Income				
< $50,000	34.07	30.20	37.04	34.97
$50,000–$99,000	38.10	40.50	36.94	36.87
$100,000–$149,999	16.72	18.70	15.92	15.53
> $150,000	11.11	10.60	10.11	12.63
Education				
Less than high school	0.70	0.70	0.70	0.70
High school graduate	10.83	10.30	11.71	10.52
Some college	19.45	17.20	22.52	18.64
Associate degree	10.08	10.20	10.41	9.62
Bachelor's degree	42.21	43.40	40.04	43.19
Graduate or professional degree	16.72	18.20	14.61	17.33
Population density				
Rural	16.32	16.90	15.72	16.33
Suburban	53.12	54.00	52.35	53.01
Urban	29.93	28.40	31.33	30.06
Census region				
Midwest	19.69	21.20	18.22	19.64
Northeast	20.12	23.10	18.02	19.24
South	39.47	39.40	39.54	39.48
West	20.72	16.30	24.22	21.64
Race				
Asian	9.09	6.90	10.51	9.82
Black/African American	10.48	9.20	11.41	10.82
Native American/Alaskan	0.57	0.30	0.80	0.60
Hawaiian/Pacific Islander	0.20	0.20	0.20	0.20
White/Caucasian	72.87	77.70	69.47	71.44
Two or more races	4.97	3.60	5.51	5.81
Other	1.84	2.10	2.10	1.30
Ethnicity				
Hispanic	4.84	4.90	5.51	4.11
Spanish	0.77	0.90	0.60	0.80
Latino	3.24	2.10	5.41	2.20
Political Affiliation				
Democrat	49.28	48.10	50.65	49.10
Republican	19.79	22.90	16.92	19.54
Third-Party	0.67	0.60	0.70	0.70
Independent	28.26	27.40	29.43	27.96
Other	2.00	1.00	2.30	2.7

Note: Values reported in percentage of sample unless otherwise specified.

[a] Age is reported in years with standard errors in parenthesis.

Source: Prepared by the authors.

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Latino/a Immigrant Farmers in the Midwest Navigate Market Entry and Sales Challenges

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JEL Classifications: C83, D1, J15
Keywords: Agriculture, Barriers, Immigrant farmers, Latino/a, Midwest

Plowing Through: An Insight into Latino/a Farming Challenges

The Midwest is experiencing a subtle yet profound demographic transformation, marked by an increasing number of producers identifying as Hispanic, Latino, or of Spanish origin (USDA-NASS, 2022). For clarity and consistency in this article, the terms Latino and Latina (hereafter Latino/a) will be used to refer to this diverse group of producers. According to the 2022 U.S. Agricultural Census, there are over 112,000 Latino/a farmers in the United States, cultivating approximately 37 million acres. About 9% of these farmers are based in the Midwest, highlighting the urgent need to address the unique cultural and market challenges they face.

This article examines the cultural and market obstacles that prevent Latino/a immigrant farmers from establishing sustainable farming livelihoods in the Midwest. It analyzes how these barriers affect their market entry and agricultural sales, providing insights into the strategies these farmers employ and the influence of their cultural and farming practices. Many who move to the Midwest in pursuit of farming success are met with daunting financial and cultural challenges. The insights revealed in this study not only deepen our understanding of these issues but also explain their implications for policy and practice, aiming to enhance their integration into networks for sharing information, systems that provide services to farmers, and markets for agricultural products.

Methodology: Deciphering Complex Decisions

Interviews and focus groups conducted in Missouri with both farmers and providers of agricultural services from both the public and private sectors yielded qualitative insights. These sessions assessed the relationship between Latino/a immigrant farmers and key agricultural organizations as well as these providers' awareness of the needs of immigrant Latino/a farmers in the Midwest.

Using these insights, a quantitative survey was designed and conducted through established networks with 124 farming households of Latino/a immigrants in Michigan and Missouri.

To analyze potential barriers and explore factors influencing farmers' decisions to engage in market activities and sell their farm products, the analysis initially examines a range of elements that might influence whether farmers opt to sell in markets. These elements include their investment in agriculture, the number of trainings they have received, their acculturation levels (both Anglo and Spanish), their age, total hours worked on the farm, and whether they have a business plan.

After deciding to engage in a market, the subsequent step explores the factors linked to the volume of farm product sales. This analysis considers the quantity of acres planted, the number of employees hired, the total personal plus household income, the use of hired farm labor, the total number of working hours on the farm each week, the farmers' levels of acculturation (both Anglo and Spanish), and their perceptions of the community environment. These factors are crucial in understanding what influences the volume of farm product sales once the farmer has entered the market.

The Heckman model was employed to address potential selection bias and validate the research findings. Initially, the analysis involved testing for the presence of selection bias to ensure the model's appropriateness for the data. The validation process focused on the formulation of exclusion restrictions, ensuring that the variables influencing the selection process did not affect the outcome variables. The independence of the error terms was examined, and the model's predictive performance was evaluated using pseudo-R2 values for the selection equation and R2 values for the outcome equation.

To further test the robustness of the findings, sensitivity analyses were conducted with variations in model specifications and sample subsets. Additionally, comprehensive post-estimation diagnostics, including Wald and likelihood ratio tests, were performed to compare the Heckman model with other bias-correction methods and confirm the necessity and effectiveness of adjustments made for selection bias.

This two-stage Heckman model elucidates the dynamics of market participation and farm product sales among immigrant Latino/a farmers, offering insights to guide the development of targeted support. While basic statistical methods reveal factors influencing market participation across households, it is crucial to recognize that not all households may choose to participate due to various market impediments, potentially introducing sample-selection bias (Greene, 1998; Costales et al., 2007; Abdelali-Martini, Dhehibi, and Aw-Hassan, 2014). To tackle this issue, we used the Heckman (1979) model, a method widely applied in studies examining market entry and participation challenges faced by smallholder farmers (Abdelali-Martini, Dhehibi, and Aw-Hassan, 2014; Adetola, Oluwatayo, and Soliu, 2014; Prifti et al., 2019; Karing'U, Isaboke, and Ndirangu, 2020; Lutta et al., 2021). Heckman's two-step approach begins with the selection equation to estimate a nonselection hazard (inverse Mills ratio, IMR), which corrects for selection bias in the subsequent outcome equation involving linear least squares regression (Wooldridge, 2010).

A lack of significance of the IMR in small samples does not necessarily indicate the absence of selection bias. Instead, it may reflect the limitations of small datasets in detecting such biases. This challenge is well-documented in the econometric literature, particularly in studies concerning the Heckman model (Verbeek and Nijman, 1992; Davidson and MacKinnon, 2004; Kennedy, 2008). Such limitations underscore the importance of interpreting IMR results cautiously, especially when dealing with small samples.

The determinants of market engagement and agricultural transactions for Latino/a immigrant farmers are informed by prior studies. These studies estimated the likelihood of market engagement based on multiple factors: agricultural asset investment (Alene et al., 2008; Oumaa et al., 2010; Okoye et al., 2016; Akhter, Awudu, and Dil, 2017; Lutta et al., 2021), access to data as indicated by the number of trainings sessions attended (Karing'U, Isaboke, and Ndirangu, 2020), knowledge of agricultural management via business planning (Okoye et al., 2016), and farmer demographics (Alene et al., 2008; Sebatta et al., 2014; Mmbando, Wale, and Baiyegunhi, 2015; Okoye, Mbanasor, and Okoye, 2019; Karing'U, Isaboke, and Ndirangu, 2020; Lutta et al., 2021). Indicators of Spanish and Anglo acculturation have not yet been used to evaluate the challenges to engage in markets or sell farm products.

Gathering Insights: How Data Was Collected

The study included 124 households with diverse farming operations across Michigan and Missouri. Most households migrated from Mexico, and a smaller number originated from South and Central America; Spanish was the mother tongue among the households.

Key variables examined include the scale of agricultural investments, encompassing expenditures on land, equipment, buildings, and livestock. The study also explored farmers' exposure to training sessions focused on farming production and business management, assessing their participation. The research examined both Spanish and Anglo acculturation—the process through which households adapt to and integrate new cultural values, customs and norms (Redfield, Linton, and Herskovits, 1936; Valdivia et al., 2012), particularly in contexts that may vary between bilingual and monolingual settings. While measures of Spanish and Anglo acculturation have been applied to understand how Latino/a immigrants acculturate to the communities in which they live or work, using Spanish and English, they have yet to be utilized to assess barriers to market engagement or farming product sales. It is crucial to understand that in this context, acculturation relates not only to general societal integration but specifically to the practices of farming and market participation. "Spanish acculturation" does not imply a baseline of 100% retention of Hispanic cultural practices for Latino/a immigrants; rather, it measures the extent to which individuals actively continue engaging with their native cultural behaviors and language after immigration.

The Spanish or Anglo acculturation variables assessed included linguistic practices among social circles (family and friends), spoken and written language abilities, and skills in utilizing digital media in Spanish or English. This approach allows for a nuanced understanding of how households integrate into or retain their cultural identities across both Anglo and Latino/a cultures, essential for effective engagement with agricultural stakeholders that conduct their business in English. Linguistic habits serve as a critical proxy for acculturation because they reflect not only an individual's ability to communicate within a new cultural context but also their integration into social, economic, and educational spheres. As described by Portes and Rumbaut (2006), language is a core component of culture that mediates assimilation and cultural identity among immigrants. Further, Chiswick and Miller (2001) and Valdivia et al. (2008) illustrate how language acquisition enhances social and economic integration, while Dustmann and Fabbri (2003) link language proficiency directly to improved economic outcomes. Last, Berry (1997) points out that bilingualism can represent a bicultural identity, facilitating adaptation to and preservation of cultural heritage.

Table 1. Farming Metrics for Latino/a Immigrant Farmers

Characteristic	Mean	Variability	Observations	Note
Log of investment in agriculture**, dollars**	9.28	2.01	90	
Number of trainings in ag**.** production and financial management	21.90	19.66	124	
Cultural adaptation scale				
Anglo acculturation	2.11	0.95	118	
Spanish acculturation	3.45	0.45	119	
Age of farmers**, years**	51.24	12.57	112	
Weekly work hours on farm	28.54	24.00	124	
Business plan prese**nce**	7% (Yes)		124	Binary variable (1=yes, 0=no)
Number of acres pla**nted**	7.76	16.63	124	
Number of employees	1.65	4.79	124	
Log of personal plus household income**, dollars**	21.19	0.99	75	
Perception of community environment	1.65	4.78	124	
Hired farm labor	31% (Yes)		124	Binary variable (1=yes, 0=no)
Quantity of agricultural product sales	14,218.24	65,280.93	124	

Source: This information was collected from Latino/a immigrant farmer households in Michigan and Missouri in 2018. The mean represents the average measure observed for each characteristic; variability indicates how much the data points differ from the average. Observations are the number of data points collected for each characteristic. The investment in agriculture and personal plus household income were converted to logarithmic form to normalize data and reduce the impact of a few outliers with exceptionally high values.

Other data points included the farmer's age, weekly working hours on the farm, acreage cultivated, employees (including compensated family members), and individual plus household earnings (see Table 1). Survey data, production, sales, and training sessions collected in 2018 encompass market transactions from that year.

The Negative Immigrant Community Experience scale, created by Flores et al., (2019), measures farmers' perceptions of their local community environments and the psychological impacts thereof. Agricultural product sales are quantified by the total revenue from crops, hay, and livestock. Additional variables indicate whether the farmers have a business plan, employ labor, and participate in the market, marked by binary indicators for each condition. This dataset paints a detailed portrait of the lives and business operations of Latino/a immigrant producers residing in the Midwest.

Farmers in the sample with market sales above zero exhibit significantly more farming experience, additional training, higher agricultural investments, and greater personal plus household income. In contrast, farmers without market sales generally show significantly higher levels of Spanish acculturation than their market-active peers (see Table 2).

Key Insights from Market Entry Barriers

The analysis identified key trends, shown in Table 3. Notably, there is a significant correlation between higher investments in agriculture and enhanced training with a greater likelihood of market engagement. Specifically, an increase in investment is associated with a 10% higher likelihood of market engagement. This implies that for each unit increase in the logarithm of investment in agriculture, the probability of engaging in the market increases by 10%. Similarly, additional training is associated with a 1% increase in market engagement likelihood, indicating that each additional unit of training in agricultural production and financial management increases market participation chances by 1%.

In contrast, cultural dynamics pose considerable challenges. Both Anglo and Spanish acculturation are associated with a significantly lower likelihood of market entry, by 20% and 26%, respectively. This means that as farmers become more acculturated to Anglo and Spanish cultures, their likelihood of entering the market decreases by these percentages. These findings highlight the multifaceted factors shaping farmers' decisions to engage in the market. A deeper comprehension of these elements is crucial for devising

Table 2. Market Participation: Comparing Participants to Nonparticipants

Variable	Market Participants (N = 74)	Nonmarket Participants (N = 50)	Pooled Sample (N = 124)	t/ X^2 Test
Age, years	51.42	50.97	51.24	-0.2 (2.425)
Gender, (%)				
Male	66	44	110	0.0421
Female	8	6	14	
Farm ownership (%)				
Single	57	38	76.61	
Family	13	10	18.55	0.5674
Rent	1	1	1.61	
Other	3	1	3.23	
Education, years	4.72	5.38	4.98	1.07(0.6158)
Farming as a primary activity (%)				
Yes	19	9	22.6	1.00
No	55	41	77.4	
Previous farming experience (%)				
Yes	58	40	79	0.004**
No	16	10	21	
Length of residency in the Midwest (%)				
1-3	2	1	2.42	
4-7	4	2	4.84	2.20
4-8	67	44	89.52	
All my life	1	3	2.23	
Immigration status				
Naturalized U.S. citizen	34	19	42.74	
Permanent legal resident	28	19	37.90	
Temporary legal resident	1	0	0.81	2.45
Other immigrant status	11	12	18.55	
Number of trainings	28.54	12.08		-5.0 (3.29)***
Anglo acculturation, index	2.07	2.16	2.11	0.50 (0. 1784)
Spanish acculturation, index	3.37	3.57	3.45	2.48 (0.2055)**
Investment in agriculture, dollars	51,219.24	14,570.28	36,441.44	-2.25 (16,271.17)**
Farm size, acres	22.76	24.39	23.42	0.18 (9.0)
Personal income, dollars	36,674	22,384	30,912	-1.84 (7,762.09)*
Household income, dollars	41,534	25,180	34,939	-2.09 (7,804.89)**

Notes: Data for this analysis were gathered from Latino/a immigrant farmers across Michigan and Missouri in 2018. Significant differences between market-participating and nonparticipating farmers are marked by asterisks. Single, double, and triple asterisks (*, **, ***) denote statistical significance at the 10%, 5%, and 1% level, respectively. Comparisons between participants and nonparticipants were performed using T-tests (t) or Chi-square (X^2) tests.

Table 3. Influential Factors on Farmers' Market Participation

Factor	Coefficient Estimate for Market Participation	Likelihood of Market Entry	Statistical Significance
Investment in agriculture (log of investment)	Increases by 10%	More likely to participate	***
Training in ag. production & financial mgmt.	Increases by 1%	More likely to participate	***
Cultural adaptation scale			
Anglo acculturation	Reduces by 20%	Less likely to participate	***
Spanish acculturation	Reduces by 26%	Less likely to participate	**
Farmer's age	No effect	No effect	No impact
Work hours on farm	No effect	No effect	No impact
Business plan for farm	No effect	No effect	No impact

Source: This information was gathered from Latino/a immigrant farmers in Michigan and Missouri in 2018. Statistical significance is indicated by asterisks. Single, double, and triple asterisks (*, **, ***) denote statistical significance at the 10%, 5%, and 1% level, respectively.

targeted interventions that assist farmers in overcoming obstacles to market entry.

Agricultural Sales Barriers

There is a significant correlation between agricultural sales and several variables, as shown in Table 4. These factors encompass the acres planted, number of employees, use of hired labor, combined personal plus household income, and total weekly hours worked on the farm. In contrast, greater Anglo acculturation levels and a farmer's negative perception of the community environment are both significantly and inversely related to agricultural sales.

Acculturation and Farming Practices: Navigating Economic and Social Landscapes

Acculturation significantly influences the livelihoods and asset accumulation strategies of Latino/a immigrants in the Midwest. Valdivia et al., (2012) showed that Latino/a immigrants well-integrated into the Anglo culture—who can write, speak, and use information in English—often secure supplementary income through more diverse employment. In contrast, those with greater extent of Spanish acculturation tend to hold less diversified income sources, have lower earnings and build their networks among family and friends. Latino/a immigrant farmers with high Spanish acculturation encounter barriers when entering markets that predominantly operate in English, underscoring the urgent need for bilingual support in agricultural training. Conversely, those with higher English acculturation often work more off the farm, dedicating less time to agricultural pursuits (Leiva, 2023). Factors like acreage, workforce size, hired labor, combined personal and family income, and farming hours are positively associated with agricultural sales. Despite these potential advantages, farmers' perceptions of community acceptance are significantly and negatively associated with sales. Socially, the perception of community acceptance plays a profound role in farmers' professional activities and overall well-being. Experiences of discrimination (García-Pabón, 2011; Minkoff-Zern and Sloat, 2017; Minkoff-Zern, 2018; Minkoff-Zern, Welsh, and Ludden, 2019) can significantly dampen their motivation and success in agriculture, emphasizing the urgent need for inclusive practices and policies that promote a supportive community environment (Ramos et al., 2017; Sánchez, Gorgo-Gourovitch, and Stivers, 2019; Valdivia et al., 2008).

Overcoming Economic and Social Challenges

Economically, Latino/a immigrant farmers often depend on off-farm income from personal and family sources (García-Pabón and Lucht, 2009; Lewis, 2009; García-Pabón, 2011; Minkoff-Zern and Sloat, 2017; Minkoff-Zern, 2018; Minkoff-Zern, Welsh, and Ludden, 2019, 2020; Leiva, 2023) due to their limited capacity to meet lending institutions' criteria due to poor record keeping, small operations, or cultural financing preferences. Currency devaluation in unstable economies in Latin American can lead some Latino/a immigrant farmers to favor cash as a safer means of transaction, often due to a historical distrust of banks. As a result, they tend to eschew banking services, opting to manage their finances exclusively in cash (Maurizio, 2021; Leiva, 2023). In several Latin American countries, a large part of transactions occurs outside of official systems. While the upper-middle-class segments in these regions rapidly embrace new technologies and conduct transactions online, a considerable minority continues to prefer cash transactions within the informal sector. This preference suggests a slower shift toward digital payment methods and computer-generated goods (Lehr, 2021, as cited in EBANX, 2021).

Table 4. Influential Factors on Agricultural Sales for Latino/a Farmers

Factor	Coefficient Estimate for Sales Volumes	Statistical Significance
Acres planted for crops and hay	1,765.6	***
Number of employees hired	4,054.4	***
Personal plus household income	8,432.0	***
Hired farm labor	24,898.0	***
Total hours of work on the farm per week	293.4	***
Anglo acculturation	-4,005.7	**
Spanish acculturation	-4,007.1	
Farmer's perception of community disapproval	-9,313.3	**
Selection bias correction factor (IMR)	2,067.1	

Source: This information was gathered from Latino/a immigrant farmers in Michigan and Missouri in 2018. Statistical significance is indicated by asterisks. Single, double, and triple asterisks (*, **, ***) denote statistical significance at the 10%, 5%, and 1% level, respectively.

The reliance on personal and family income sources underscores the necessity for financial services that cater to their unique financing choices and support small-scale, nontraditional farming operations, ensuring they can thrive amid economic and cultural challenges. Because of their dependence on personal and household income to finance their agricultural operations, Latino/a immigrant farmers often experience slower growth compared to other small-scale farmers.

Support and Policy Recommendations for Latino/a Immigrant Farmers

Latino/a immigrant farmers in Michigan and Missouri confront a series of complex barriers that significantly impact their market participation and agricultural sales. This study provides additional information on these challenges and their potential implications for agricultural policy. The findings show that substantial investments in agriculture and improved training in farming practices and financial planning are significantly linked to an increased likelihood of market involvement. Conversely, Spanish and Anglo acculturation are both significantly associated with a reduced likelihood of engaging in the market. In terms of farm product sales, farmed acreage, employee count, use of hired labor, combined personal and household income, and total hours dedicated to farming are significantly linked to higher farm product sales. On the other hand, greater Anglo acculturation and negative perceptions of the community environment among farmers are significantly linked to lower farm product sales.

While facing challenges common to most beginning farmers, Latino/a immigrant farmers also confront unique and substantial fixed costs. These include high investments required for acquiring or leasing land, purchasing machinery, and building necessary infrastructure. Additionally, they require extensive training to adapt to a new market characterized by different rules and norms. However, due to unique barriers stemming from cultural preferences for financing—such as an aversion to borrowing from financial institutions—and their typically smaller scale of operations, which often disqualifies them from average government small farming programs, their transition into farming can take significantly longer without tailored government support (Leiva, 2023). Further, farmers' negative perception of the community environment is significantly associated with lower agricultural sales, suggesting that the social and cultural environment surrounding these farmers can greatly affect their economic outcomes. This underscores the need for comprehensive policy approaches that address not only economic factors but also the broader social dynamics that influence farm productivity and sustainability. Moreover, beyond ownership costs, Latino/a immigrant farmers encounter unique variable operating expenses. Latino/a immigrant households who are more acculturated to the Anglo culture generally hold a broader range of livelihoods and significantly higher diverse income streams beyond farming (Valdivia et al., 2008). However, this shift can result in fewer household labor hours being dedicated to farming activities, which in turn influences their time spent farming (Leiva, 2023).

This study's diverse sample across two states, representing various types of farming operations—including small beef cattle ranches, a few larger poultry operations, and traditional Latino/a farmers who cultivate garden vegetables and blueberries—underscores the complexity of these challenges. While the findings are specific to Michigan and Missouri, they provide valuable insights for farm support services and government initiatives nationwide. Future studies could broaden this research by incorporating a larger sample size to further examine the effects of education, acculturation, and financial assistance on market involvement and farm production sales challenges. Such research would deepen our understanding of the challenges faced by Latino/a immigrant farmers and enhance the effectiveness of policy interventions in this growing population.

For More Information

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